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The use of accounting information for the valuation of dual-class shares listed on China's stock markets

Gongmeng Chen, Michael Firth, and Jeong-Bon Kim*

Abstract—This study examines whether accounting data are useful in helping explain the market value of listed firms in China. In particular, we focus our investigation on companies that have issued dual-class shares sold to domestic investors (A-shares) and foreigners (B-shares). Domestic accounting standards (DAS) are used for the financial statements of A-shares while international accounting standards (IAS) are used for B-shares. Our results show that IAS earnings information is incorporated in the prices and returns of B-shares. In contrast, A-share investors appear to place most weight on DAS earnings and only recently has there been an association with IAS information. Book values are value relevant for B-share prices but not for A-share prices. Sensitivity tests show that accounting information is more likely to be impounded in share prices and returns for firms with high individual (i.e. non-government) share ownership. Based on our results, we argue that China's move towards the adoption of IAS will be useful for A-share investors, especially in light of the country's recent accession to the WTO and the consequent opening-up of the economy.

1. Introduction

There is a large and growing literature on the usefulness of accounting information in explaining stock prices and investment returns. One strand of this research evaluates the comparative usefulness of accounting earnings compiled under different generally accepted accounting principles (GAAP). Another, and very recent, strand of research examines the role of accounting reports in the valuation of listed companies in newly emerging markets. This study adds to both these strands of research by examining the association between accounting numbers and share valuation of companies in China (the People's Republic of China – PRC). Some listed companies in China have issued tradable shares to foreign investors (termed B-shares) as well as issuing tradable shares to domestic investors (termed A-shares). International accounting standards (IAS) are used to prepare accounting reports for the B-shareholders, while China's domestic accounting rules (DAS) are used to prepare them for the A-shareholders.

The domestic-foreign share feature allows us to examine the incremental information content of earnings compiled according to international accounting standards in explaining A- and B-share prices. We are interested in examining whether IAS profit and asset numbers add anything to China's DAS asset and profit numbers in terms of their ability to predict the pricing and stock returns of A- and B-shares. Our research is important as little is known about how shares are priced in China's new stock markets. For example, do the profit numbers and asset values in published accounts reflect the information embodied in share prices, and do they help explain stock returns? If accounting numbers are important, does the use of IAS add value to the DAS numbers? We hope our research sheds some light on these issues. From a policy perspective, China's GAAP is rapidly evolving and regulators want to know if domestic and foreign investors find IAS information important. If so, this suggests ways in which domestic accounting standards can be improved.

The paper proceeds by briefly describing China's fledgling stock markets and the role of accounting information in valuing companies. The research design is then described and is followed by a presentation and discussion of the results. The final section presents the conclusions.

2. China's capital markets and accounting practices

Beginning in the 1980s, China began to corporatise some of its state-owned enterprises (SOEs). This involved converting selected SOEs into companies with share capital, which were owned by

*The authors are at the Department of Accountancy, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong. They would like to thank the reviewer and the editor for their detailed comments on earlier versions of the paper. The paper has also benefitted from helpful comments from participants at the CAFR conference (1999) and the Twelfth Asia-Pacific Conference on International Accounting Issues (2000). The authors thank Lu Jian and Gao Ning for their excellent research assistance. Correspondence should be addressed to Professor M. Firth, Department of Accountancy, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong. Tel: (852) 2766 7062; Fax: (852) 2330 9845; email: acmaf@inet.polyu.edu.hk

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central and local government, government ministries and organisations with close links to the government. Some of these companies were allowed to issue shares to individuals (A-shares) and thereby to raise private capital. Initially, these A-shares were difficult to trade as there was no organised secondary market. Because of the difficulty in trading shares, the government allowed the formation of two stock exchanges; one in Shanghai (the SHSE opened in December 1990) and the other in Shenzhen (the SZSE opened in June 1991). There have been more than 900 A-share listings across both exchanges. In 1992 the government allowed selected companies to raise capital by selling new shares to foreigners (B-shares). By 1997 there were 100 B-share listings and 82 of them had also issued A-shares. The market for A- and B-shares is segmented in the sense that B-shares can only be owned and transferred between foreigners, while A-shares can only be owned and transferred between PRC citizens. The segmentation has been effectively enforced as can be observed by the differing prices for A-shares and B-shares issued by the same company. Although a company's A- and B-shares have the same rights and receive the same dividends (albeit in different currencies¹), the A-share price is, on average, more than twice the price of a B-share (Poon et al., 1998) during the period we investigate.²

There are three major categories of shares in firms that are listed. First, there are shares owned by central and local government and their various ministries. Second, there are legal entity shares owned by investment institutions, other SOEs, and the foreign partners of joint ventures. Most of the legal entity shareholders (e.g. institutions and SOEs) are under the control of, or are influenced by, the central and local government and their ministries. Shares owned by the state and legal entity shares are not tradable on the two stock exchanges. Third, there are tradable A- and B-shares sold to the public. On average, each of these categories of shareholders own about one-third of the total shares.

¹ A-shares receive dividends in and are priced in the domestic currency (renminbi or RMB). B-shares listed in Shanghai receive dividends in and are priced in US dollars. B-shares listed in Shenzhen receive dividends in and are priced in Hong Kong dollars.

² Beginning in 2001, domestic investors with access to foreign currencies (U.S. dollars for Shanghai listed firms and Hong Kong dollars for Shenzhen listed firms) can invest in B-shares. As a consequence of this policy change, B-shares prices are now priced at a small discount to the A-shares. Renminbi is not a fully convertible currency and so the number of domestic investors with access to US and Hong Kong dollars is quite small.

³ See Bao and Chow (1999) for a brief review of the differences in accounting principles.

⁴ B-share annual reports include A-share accounts as supplementary information. A reconciliation of the DAS profit to the IAS profit is also disclosed in the B-share annual report.

As the legal entity shares are often under the control or influence of the state, the majority ownership of most listed firms resides with the state and its entities. This form of business restructuring is known as the partial privatisation of SOEs.

A-shares are normally owned by individual investors and they are informed about profit and accounting numbers via official announcements in newspapers (this information is not mailed to them). The accounting numbers are based on domestic accounting standards. B-shares are usually owned by foreign institutional investors and the B-share accounts are based on international accounting standards. The profit number, asset numbers, and book values differ between A-share reports and B-share reports because of the different accounting principles used (DAS and IAS).³

Although the ownership of shares is effectively segmented, there are no barriers to A-shareholders accessing B-share profit and annual report data and, likewise, there are no barriers to B-shareholders accessing A-share profit and balance sheet data.⁴ It is possible that some investors will use both the A-share and the B-share accounting reports in their investment decisions on A- or B-shares. Our study addresses this issue by examining the stock market's reaction to IAS and DAS accounting data.

Disclosure policies for B-share reports are in line with those observed in Hong Kong and other countries with developed stock markets; the level of disclosure is much higher than for A-share reports (Mok and Hui, 1998; Chen et al., 1998). Most companies that issue B-shares, have also issued A-shares and these form the sample for our study. These companies publish two profit numbers and two balance sheets. One is based on domestic accounting standards (DAS) and the other uses international standards (IAS). The DAS and IAS numbers are released or published on the same day. The accounting reports based on domestic accounting standards are audited by Chinese CPA firms while B-share reports are audited by foreign CPAs (invariably one of the Big Five).

3. Research design and results

Sample and data sources

By the end of 1997, 82 companies had issued both A- and B-shares and were listed on the SHSE or SZSE. These companies form the data sample. We use accounting reports for each of the 82 companies from the date of listing through to 1997. Some companies have five years of data (1993 to 1997) while others have four, three, two and one year of data. The maximum number of firm-year observations is 325. Missing data, primarily relating to earnings and book value numbers, reduce the data sample to 298 observations. Accounting data based on domestic accounting standards are

Table 1
Companies issuing dual-class shares by year

Year	Number of new B-share IPOs	Number of new B-share IPOs with A-shares	Total number of firms with A- and B-shares in issue each year	Number of dual-share firms included in the sample each year
1992	18	18	18	0
1993	23	22	40	35
1994	17	15	55	54
1995	12	6	61	58
1996	15	8	69	69
1997	15	13	82	82
Total	100	82	325	298

Table 2
Descriptive statistics for major variables

Variable	N	Mean	Median	Std. Dev.	Min.	Max.
Annual return for A-shares (R_t^A)	298	0.35	0.20	0.77	-0.75	3.62
Annual return for B-shares (R_t^B)	298	0.18	0.05	0.66	-0.62	5.40
Price per A-share (P^A)	298	9.63	7.99	5.68	2.40	35.83
Price per B-share (P^B)	298	3.21	2.68	2.31	0.92	13.32
Earnings per share (EPS) based on Domestic Standards (X^D)	298	0.36	0.31	0.27	-0.98	1.62
Difference in EPS based on IAS and EPS based on DAS, ($X^I - X^D$)	298	-0.05	-0.03	0.10	-0.40	0.38
Book value of equity per share based on DAS	298	2.76	2.08	0.75	1.36	6.28
Book value of equity per share based on IAS	298	2.70	2.53	0.83	1.00	5.42
Firm size (lnMV)	298	21.63	21.23	0.76	19.0	24.10

extracted from annual reports published in financial newspapers (*Securities Times* and *Shanghai Securities Daily*). Accounting data based on IAS and stock price data are collected from the Shanghai and Shenzhen Stock Exchanges. The fiscal year end for Chinese companies is 31 December and annual reports, together with earnings figures, must be published within four months of the year end.

A breakdown of the sample is given in Table 1. The first two data columns relate to the year of listing while the last column relates to the number of observations for each year. Note that there are no observations for 1992; this is due to missing earnings and book value numbers. Summary statistics are shown in Table 2. The mean and median annual stock returns for A-shares exceed the mean and median returns for B-shares. For example, the median return for A-shares is 20% while it is just 5%

for B-shares. The mean price per B-share is less than 40% of the mean A-share price (the B-share prices in US\$ and HK\$ are converted to RMB for the purposes of Table 2).⁵ On average, IAS earnings per share are less than DAS earnings. The mean DAS earnings per share is 0.36 RMB and the mean IAS earnings per share (converted to RMB) is 0.31 RMB. The medians are 0.31 RMB under DAS and 0.28 RMB under IAS. The mean book value of equity (net assets) is slightly higher under DAS, but the median value for DAS is much lower than the median book value under IAS. The sum-

⁵ The translation factors reflect the official exchange rates at the fiscal year end. There is no reliable source of unofficial 'blackmarket' exchange rates. Anecdotal evidence suggests the black market rates might not be very different from the official rates and by the end of our test period, the RMB was considered undervalued by many speculators.

mary statistics do not reach a strong consensus on whether DAS or IAS yield the higher book values.

4. Empirical procedures and results

4.1. Contemporaneous price association tests

The basic research design involves modelling company valuation (share price) as a function of earnings and book value of equity. The model described in this section is similar to (but not identical to) the models developed by Amir et al. (1993), Barth and Clinch (1996), and Harris and Muller (1999).

As mentioned earlier, firms with both A- and B-shares listed on the SHSE and the SZSE are required to disclose two different sets of financial statements: (1) one based on domestic accounting standards (DAS); and (2) the other based on international accounting standards (IAS) promulgated by the International Accounting Standards Committee (IASC).⁶ In an attempt to examine the value relevance of reported earnings and book values based on DAS (hereafter DAS earnings and DAS book values), and the incremental predictive power of reported earnings and book values based on IAS, (hereafter IAS earnings and IAS book values) over DAS earnings and book values, we estimate the following valuation model:

$$P_{jt} = \beta_0 + \beta_1 X_{jt}^D + \beta_2 (X_{jt}^I - X_{jt}^D) + \beta_3 BV_{jt}^D + \beta_4 (BV_{jt}^I - BV_{jt}^D) + u_{jt} \quad (1)$$

where, for firm j in year t ,

P = price per share six months after the fiscal year end;⁷

X^D = DAS earnings per share;

X^I = IAS earnings per share;

BV^D = book value of equity per share based on domestic accounting standards;

BV^I = book value of equity per share based on international accounting standards;

u = unspecified random factors.

US\$ and HK\$ are converted to renminbi (RMB) before running the regression equations. This means share prices, earnings, and book values of the B-share accounts are translated to RMB using the exchange rate at the year end.⁸

We estimate model (1) separately for the A-share and B-share samples, using prices of A-shares and prices of B-shares, respectively, as the dependent variable. The model states that share price is a weighted combination of earnings and book value (net assets). Two measures of earnings are used, namely, earnings per share based on DAS and the difference between IAS and DAS earnings per share. In the above model specification, β_2 captures the incremental ability of IAS earnings (beyond DAS earnings) to explain share prices. A positive sign is hypothesised for β_1 , reflecting the

positive association between share price and earnings per share. If IAS earnings add incremental information, then we expect a positive and significant sign on β_2 . The sign and significance of β_2 is used to assess the incremental usefulness of profits calculated under international accounting standards. A positive coefficient is expected for β_3 as the book value per share is associated with market value per share. We expect a positive sign on β_4 if IAS book values provide incremental information over and above DAS book values. We also investigate the size of β_2 relative to β_1 , and likewise β_4 relative to β_3 . These comparisons indicate the relative importance placed on DAS and IAS information.

Table 3 reports yearly and full sample regression results for model (1). Panel A relates to A-shares (the dependent variable is the price of the A-share) and panel B relates to B-shares (the dependent variable is the price of the B-share). DAS earnings (X^D) are highly significant in explaining share prices for both A-share and B-share samples.⁹ The difference between IAS and DAS earnings ($X^I - X^D$) is not significant in explaining A-share prices in the years 1993 to 1995, but becomes weakly significant (at the 0.10 level, one-tail test) in 1996 and 1997, and moderately significant (at the 0.05 level, one-tail test) for the full sample. The results suggest local investors have become more familiar with IAS profit numbers in recent years and are now using them to help price shares. However, in all years and for the full sample, the coefficients on X^D are significantly greater than the coefficients on $X^I - X^D$ ($\beta_1 > \beta_2$). Thus, local investors have placed greater weighting on the DAS earnings than the IAS earnings.

In panel B, the coefficients on $X^I - X^D$ are statistically significant at the 0.05 level or better in all years and for the full sample. IAS earnings are therefore incrementally useful for explaining B-share prices. The differences between the β_1 and β_2 coefficients in panel B are not statistically significant and this indicates B-share investors weight the incremental IAS earnings in a similar

⁶Now re-named the International Accounting Standards Board.

⁷A period of six months ensures that the earnings numbers and annual reports have been published. Other studies also use a period of six months after the year end (e.g. Harris and Muller, 1999). Replications using share prices four months after the year end give similar results.

⁸As a sensitivity test, we replicate the regressions using the conversion exchange rate six months after the year end (to coincide with the date used to record the share price). The results are similar to those reported here and so they are not separately shown in the paper.

⁹The significant and positive coefficient for DAS earnings in explaining A-share prices implies domestic shareholders do react to accounting data. Although domestic investors are often portrayed as lacking financial knowledge and relying heavily on gossip and rumour, our results paint a more favourable picture of their financial sophistication.

Table 3**Results of regressions for price models with earnings and book value**

$$\text{Model (1): } P_{jt} = \beta_0 + \beta_1 X_{jt}^D + \beta_2 (X_{jt}^I - X_{jt}^D) + \beta_3 BV_{jt}^D + \beta_4 (BV_{jt}^I - BV_{jt}^D) + u_{jt}$$

Panel A: Using A-share prices as the dependent variable (t-statistics in parentheses)

Variable ^a	1993	1994	1995	1996	1997	Full sample
Constant	3.12 (2.12)**	2.60 (2.00)**	5.13 (3.36)***	5.02 (2.68)***	3.77 (2.12)**	4.38 (2.69)***
X ^D	8.76 (2.89)***	7.31 (2.75)***	8.98 (3.14)***	10.72 (3.28)***	9.87 (3.62)***	10.48 (5.01)***
X ^I - X ^D	1.03 (0.82)	0.88 (0.57)	1.39 (1.18)	0.97 (1.34)*	1.08 (1.43)*	1.05 (1.69)**
BV ^D	0.21 (0.62)	0.93 (0.72)	1.23 (1.03)	0.48 (1.32)*	0.36 (0.85)	0.53 (1.07)
BV ^I - BV ^D	0.08 (0.61)	0.19 (0.84)	1.78 (0.54)	2.62 (0.92)	1.83 (0.70)	2.06 (0.73)
adjusted R ²	0.15	0.17	0.17	0.20	0.24	0.24
Test of equality of coefficients:						
Difference between β_1 and β_2	7.73 (2.63)***	6.43 (2.09)**	7.59 (2.45)**	9.75 (2.91)***	8.79 (3.11)***	9.43 (4.32)***
Difference between β_3 and β_4	0.13 (0.36)	0.74 (0.56)	-0.55 (-0.16)	-2.14 (-0.70)	-1.47 (-0.56)	-1.53 (-0.53)

Panel B: Using B-share prices as the dependent variable (t-statistics in parentheses)

Variable ^a	1993	1994	1995	1996	1997	Full Sample
Constant	1.40 (1.53)	0.92 (1.32)	1.26 (1.90)	0.87 (1.93)	0.76 (2.03)**	1.01 (1.30)
X ^D	5.37 (4.02)***	4.13 (6.91)***	6.21 (7.37)***	3.82 (5.00)***	5.99 (6.12)***	5.25 (10.34)***
X ^I - X ^D	3.16 (2.15)**	2.82 (2.79)***	3.68 (1.97)**	2.07 (1.99)**	3.58 (2.69)***	3.92 (3.01)***
BV ^D	0.41 (1.57)*	0.53 (1.72)**	0.38 (1.13)	0.21 (1.97)**	0.38 (2.02)**	0.40 (1.99)**
BV ^I - BV ^D	0.13 (0.71)	0.08 (0.60)	-0.47 (-1.19)	-0.82 (-1.32)	0.17 (0.85)	0.03 (0.82)
adjusted R ²	0.37	0.45	0.52	0.50	0.50	0.52
Test of equality of coefficients:						
Difference between β_1 and β_2	2.21 (1.11)	1.31 (1.12)	2.53 (1.23)	1.75 (1.35)	2.41 (1.45)	1.33 (0.95)
Difference between β_3 and β_4	0.28 (0.88)	0.45 (1.34)	0.85 (1.64)	1.03 (1.63)	0.21 (0.77)	0.37 (1.81)*

^a Variables are defined as below:

P = price per share six months after fiscal year end;

X^D = Earnings per share based on domestic accounting standards (i.e., DAS earnings per share);

X^I - X^D = Earnings per share based on international accounting standards (i.e., IAS earnings per share) minus DAS earnings per share;

BV^D = Book value of equity based on domestic accounting standards

BV^I = Book value of equity based on international accounting standards

*** = statistically significant at the 0.01 level

** = statistically significant at the 0.05 level

* = statistically significant at the 0.10 level

one-tail test for directional hypotheses; two-tail tests for non-directional variables (difference between coefficients). The t-statistics are based on White's procedures to adjust for heteroskedasticity.

fashion to DAS earnings (Barth and Clinch, 1996; Harris and Muller, 1999).¹⁰ One interpretation of the lack of a statistically significant difference between the β_1 and β_2 coefficients (in panel B) is that B-share investors do not find DAS earnings *incrementally* useful in pricing shares (instead, B-share investors can use IAS earnings which encompasses the DAS profit and the incremental IAS profit). The evidence from Table 3 gives unequivocal support for the use of IAS profit numbers by B-share investors but marginal (and only recent) support for the use of IAS earnings by domestic A-share investors.

Book value based on DAS is not significant in explaining A-share prices (see Table 3, panel A) except for 1996 where BV^D is significant at the 0.10 level (one-tail test). In panel B, book value based on DAS is significant at the 0.05 level in three of the five years and for the full sample, and at the 0.10 level for 1993. In 1995, BV^D has the expected positive sign but is not significant. Book value appears to capture information used by foreign B-share investors in valuing firms but domestic investors seemingly ignore this information. The coefficients for the difference between IAS and DAS book values are not significant in any of the regressions. The differences between β_3 and β_4 are not significant in any regression except for the full sample in panel B, where it is significant at the 0.10 level (two-tail test).

Overall, the explanatory power of the model, measured by adjusted R-square, is much higher for the B-share sample (52.0% for the full sample) than for the A-share sample (24% for the full sample). In short, the results shown in Table 3 show that the ability of reported accounting numbers to explain share prices is higher for the B-share sample than for the A-share sample and that in particular, IAS earnings are more useful for explaining B-share prices than A-share prices.

4.2. Contemporaneous returns association tests

Consistent with other research (e.g. Easton and Harris, 1991; Harris and Muller, 1999), we also estimate a returns model.¹¹ The model is:

$$R_{jt} = \alpha_0 + \alpha_1 X_{jt}^D + \alpha_2 \Delta X_{jt}^D + \alpha_3 (X_{jt}^I - X_{jt}^D) + \alpha_4 \Delta (X_{jt}^I - X_{jt}^D) + \varepsilon_{jt} \quad (2)$$

¹⁰Harris and Muller (1999) argue that if the difference is statistically significant, then this implies that one set of earnings (the one with the highest coefficient) is valued as having greater persistence, or has more permanent components, than the other.

¹¹Scale and heteroskedasticity problems are mitigated in returns regressions vis-à-vis levels-based (e.g. share price) regressions. Kothari and Zimmmerman (1995) suggest using both price and returns models.

where, for firm j in year t

R = annual stock return measured to six months after the fiscal year end;
 ΔX^D = change in earnings per share from $t-1$ to t ($X_{jt}^D - X_{jt-1}^D$);
 $\Delta(X^I - X^D)$ = change in the difference between IAS and DAS earnings from $t-1$ to t ($[X_{jt}^I - X_{jt}^D] - [X_{jt-1}^I - X_{jt-1}^D]$);
 ε = unspecified random factors;
 and X^D and X^I are defined as before. X^D , ΔX^D , $X^I - X^D$, and $\Delta(X^I - X^D)$ are scaled by the share price at the beginning of the fiscal year.

Model (2) is estimated separately for the A- and B-share samples, using the returns on A- and B-shares, respectively, as the dependent variable. The model states that returns are a function of earnings and changes in earnings. Of particular interest is the information contained in the incremental earnings per share (earnings based on IAS minus earnings based on DAS), and the change in incremental earnings per share. The dependent variable is measured six months after the fiscal year end. This allows time for investors to assimilate the earnings news. Six months after year end is the period used by Harris and Muller (1999); sensitivity tests using other annual return periods (e.g. four months after year end) yield similar results.

The yearly and full sample regression results from model (2) are shown in Table 4; panel A relates to A-shares and panel B relates to B-shares. The adjusted R-squares are higher than those reported in other, non-China studies (e.g. Amir et al., 1993; Harris and Muller, 1999). DAS earnings (X^D) and changes in DAS earnings (ΔX^D) are significant in explaining A- and B-share returns. The difference between IAS and DAS earnings ($X^I - X^D$) is not statistically significant in explaining A-share returns except in the 1997 regression. Similar conclusions apply to changes in the difference between the two earnings measures ($\Delta(X^I - X^D)$). In contrast, B-share returns are positively associated with incremental IAS earnings and changes in them (except for 1993). The difference between α_1 and α_3 for the A-share returns is statistically significant. This reflects the finding that the DAS profit is important in explaining A-share returns while incremental IAS profit is not. The difference between α_1 and α_3 for the B-share returns is not significant. One implication of this result is that B-share investors can use IAS profit numbers and ignore the DAS profit (i.e. the DAS profit and the incremental IAS profit are weighted similarly by the stock market and so instead of using these separate components of IAS profit, investors could just use the IAS number). This result suggests the DAS profit is not *incrementally* valued (over and above the IAS profit) by B-share investors. The

Table 4**Results of regressions for returns models with earnings and changes in earnings**

$$\text{Model (2): } R_{jt} = \alpha_0 + \alpha_1 X_{jt}^D + \alpha_2 \Delta X_{jt}^D + \alpha_3 (X_{jt}^I - X_{jt}^D) + \alpha_4 \Delta (X_{jt}^I - X_{jt}^D) + \varepsilon_{jt}$$

Panel A: Using A-share returns as the dependent variable (t-statistics in parentheses)

Variable ^a	1993	1994	1995	1996	1997	Full sample
Constant	-0.13 (-2.10)**	-0.36 (-2.01)**	0.14 (1.97)**	-0.71 (-2.83)***	-0.26 (-3.26)***	-0.10 (-2.87)***
X^D	5.13 (4.92)***	3.87 (5.92)***	7.49 (7.27)***	4.38 (6.99)***	7.14 (7.98)***	6.83 (7.02)***
ΔX^D	2.93 (6.79)***	7.53 (6.90)***	7.30 (5.45)***	6.66 (6.38)***	8.25 (7.26)***	7.01 (9.53)***
$X^I - X^D$	0.14 (0.75)	0.27 (1.01)	0.15 (0.98)	0.76 (1.04)	0.83 (1.59)*	0.32 (1.20)
$\Delta(X^I - X^D)$	0.61 (0.85)	0.98 (0.73)	0.69 (0.54)	0.82 (1.18)	0.51 (1.08)	1.06 (0.88)
adjusted R^2	0.21	0.18	0.25	0.30	0.31	0.39
Test of equality of coefficients:						
Difference between α_1 and α_3	4.99 (4.71)***	3.6 (5.10)***	7.34 (7.05)***	3.62 (3.76)***	6.31 (6.09)***	6.51 (6.45)***
Difference between α_2 and α_4	1.92 (2.29)**	6.55 (3.79)***	6.61 (3.57)***	5.84 (4.66)***	7.74 (6.29)***	5.95 (4.22)***

Panel B: Using B-share returns as the dependent variable (t-statistics in parentheses)

Variable ^a	1993	1994	1995	1996	1997	Full sample
Constant	-0.36 (-2.99)***	-0.49 (-2.86)***	-0.20 (-2.84)***	-0.58 (-3.22)***	-0.28 (-3.03)***	-0.39 (-4.21)***
X^D	2.78 (6.29)***	1.85 (4.41)***	3.96 (5.85)***	2.09 (6.21)***	3.04 (5.37)***	3.01 (10.16)***
ΔX^D	2.10 (7.92)***	3.93 (8.01)***	4.69 (6.88)***	2.99 (6.29)***	2.22 (6.05)***	3.29 (10.65)***
$X^I - X^D$	1.97 (1.90)**	2.35 (1.96)**	3.21 (2.23)**	1.69 (3.44)***	2.00 (2.76)***	2.15 (2.10)**
$\Delta(X^I - X^D)$	0.08 (0.92)	1.13 (1.54)*	0.97 (1.62)*	0.43 (1.49)*	0.87 (1.92)**	0.74 (1.98)**
adjusted R^2	0.29	0.28	0.26	0.31	0.28	0.47
Test of equality of coefficients:						
Difference between α_1 and α_3	0.81 (0.72)	-0.5 (-0.39)	0.75 (0.47)	0.40 (0.67)	1.04 (1.13)	0.86 (0.81)
Difference between α_2 and α_4	2.02 (7.25)***	2.80 (3.17)***	3.72 (5.02)***	2.56 (4.60)***	1.35 (2.32)**	2.55 (5.26)***

^a Variables are defined as below:

R = annual stock return measured to six months after the fiscal year end;

X^D = earnings per share based on domestic accounting standards (DAS);

ΔX^D = Change in earnings per share from year $t-1$ to year t

$X^I - X^D$ = Earnings per share based on international accounting standards (IAS) minus earnings per share based on domestic accounting standards (DAS);

$\Delta(X^I - X^D)$ = Change in the difference between IAS earnings and DAS earnings, from year $t-1$ to year t ;

*** = statistically significant at the 0.01 level

** = statistically significant at the 0.05 level

* = statistically significant at the 0.10 level

one-tail test for directional hypotheses; two-tail tests for non-directional variables (difference between coefficients). The t-statistics are based on White's procedures to adjust for heteroskedasticity.

differences between α_2 and α_4 for the A- and B-share returns are statistically significant at the 0.05 or 0.01 levels. These results imply the stock market places different weights on the change in DAS profit (ΔX^D) and the change in incremental IAS profit ($\Delta(X^I - X^D)$). For A-shares, α_4 is not important while for B-shares both α_2 and α_4 are important explanators of returns (here, the change in DAS profit is weighted differently from the change in incremental IAS profit). The R-square statistics indicate the model explains 39% of the A-share returns and about 47% of the B-share returns for the full sample.

The results in Table 4 are broadly consistent with those in Table 3. In Table 3, there is limited evidence that A-share investors use IAS accounting information in setting market values; this evidence relates to later years. If the trend continues, IAS information could become more important in the future. There is limited evidence of IAS information being impounded in A-share returns (Table 4). In contrast, B-share prices and returns are associated with the incremental information contained in earnings based on IAS.

4.3. Sensitivity tests¹²

As one sensitivity test, we partition the sample based on the stock exchange where a firm is listed, Shanghai (SHSE) or Shenzhen (SZSE). A-share investors on these stock exchanges tend to come from the hinterlands of these cities and, in the case of the SHSE, northern China. Many investors in Shenzhen stocks are from Hong Kong and they tend to have more investment experience than investors on the SHSE (Chen and Firth, 1999). This characteristic may have an impact on the results. B-share investors in SHSE listed firms are mostly large international financial institutions whereas B-share investors in SZSE listed firms include individuals (mainly from Hong Kong) as well as financial institutions. This difference in investor profile could lead to different regression results across the SHSE and SZSE partitions.

In order to examine whether the specific stock exchange has any impact on the results, the sample observations were partitioned on the basis of a SHSE listing and a SZSE listing. The results in Tables 3 and 4 were mirrored in the sub-samples. Specifically, DAS profit is significant for both A-share and B-share prices across both the SHSE and the SZSE partitions (based on the pooled time series data). Incremental IAS earnings is significant at the 0.10 level for A-shares and at the 0.05 and 0.01 levels for B-shares. Book value is significant for B-share prices in both the Shanghai and Shenzhen markets. The returns (model (2)) results for both A- and B-shares are likewise similar

across the SHSE and SZSE partitions. DAS earnings and changes in earnings are important explanators of returns for firms listed on both exchanges. Incremental IAS earnings and changes in incremental IAS earnings are significant explanators of B share returns (but not A-share returns) for both Shanghai and Shenzhen listed companies. Further regression tests, broken down by years, give similar conclusions to the pooled time series results.

A second sensitivity test examines the role of ownership structure. Annual reports disclose the breakdown of shareholdings by the state, legal entities and individuals. The percentage of shares in the hands of individual investors varies a great deal across firms and it is the individual shares that are tradable in the stock market. We partition our sample on the basis of whether the percentage of shares held by individuals is above or below the median for a given year. Individual ownership is based on A-shares for the A-share analyses and B-shares for the B-share analyses. In general, the results mirror those in Tables 3 and 4. However, the model fits are better for the high individual share ownership partitions. In addition, the statistical significance of the coefficients are higher for the high individual ownership subgroup. For example, in the price regressions, X^D is significant at the 0.01 level for high individual ownership whereas it is significant at just the 0.05 level for low ownership. BV^D is significant (at the 0.10 level) for high individual ownership and it is not significant for the low individual ownership subgroup. Yearly regressions yield similar conclusions, namely that share prices and stock returns of firms with high individual share ownership are more likely to reflect accounting earnings and book values.

A further partitioning, based on whether firms have a market capitalisation (using tradable shares) above or below the median (for a given year) is also undertaken. The results from this partitioning show that models (1) and (2) fit better for the partition with the higher market capitalisation (individual share ownership measured in money amounts rather than percentage).

Following Barth and Clinch (1996) we also use a seemingly unrelated regression (SUR) approach to estimating the price and returns regressions. The dependent variables are expressed in RMB, US dollars and Hong Kong dollars. The conclusions derived from the SUR results are qualitatively similar to those reported in Tables 3 and 4.

5. Conclusion

China's equity securities markets provide a unique laboratory to investigate issues relating to the informativeness of alternative accounting procedures (GAAP). Some companies issue shares to

¹²Detailed results are available from the authors.

foreign investors (B-shares) as well as to PRC investors (A-shares). International accounting standards (IAS) are used in compiling accounts issued to B-shareholders while China's domestic accounting standards (DAS) are used in preparing A-share accounts. Although there was effective segmentation between A- and B-shares when it comes to stock ownership,¹³ there is nothing to prevent DAS-prepared and IAS-prepared financial statements being exchanged between both classes of investors.

Based on price level and stock return models, we show that accounting information can explain a significant proportion of the stock market values of firms listed on China's new stock markets. In particular, profits calculated under China's domestic accounting standards are strongly related to stock prices, and profits and changes in profit are strongly associated with stock returns. We find that the additional information provided by profits calculated under international accounting standards is reflected in the prices and returns of B-shares. Our results suggest that IAS profit numbers are used by A-share investors in more recent years although the weightings placed on the IAS earnings and changes in earnings are lower than for the DAS numbers. Book values (net assets) are impounded in B-share prices but are not significantly related to A-share prices. The difference between book values based on IAS and DAS are not significant in explaining A- and B-share prices.

Accounting information has more explanatory power for B-share prices and returns than for A-shares. Most B-share investors are large international financial institutions, and these are more expert in analysing accounting information and using it to value companies. Even private individuals investing in B-shares could use accounting information as they tend to be experienced investors. In contrast, A-share investors are typically individuals with limited financial experience and little knowledge of accounting. These A-share investors might rely more on local information (including inside connections, gossip and rumour) in pricing shares. Foreign investors find it more difficult to acquire local information (or choose to ignore it) and may be more likely, instead, to focus on accounting data. The results show, however, that accounting data is becoming more important in explaining A-share prices and returns.

Our results are robust across the two stock exchanges, Shanghai and Shenzhen. Investors in both markets appear to make similar use of accounting information. We find that when individual share ownership is high, in percentage and in

monetary terms, share prices and returns better reflect accounting earnings and book values. This finding may be due to a more active market in the shares of these companies or perhaps to investors believing the accounting numbers are more credible because they perceive companies' corporate governance to be better.

China is rapidly expanding and revising its accounting standards in light of experience over the last several years. Pressures from foreign investors and foreign financial advisers are moving China's DAS towards those of the international community and, in particular, international standards. The evidence from this paper indicates accounting information based on international accounting standards is related more closely to security prices for B-shares. However, in recent years A-share prices and returns appear to be reflecting, to some extent, IAS profit numbers. For policy makers, the message from our results is that domestic investors may now find IAS earnings increasingly value relevant and that moving DAS towards international standards could help China's investors make better or more informed stock selection decisions.

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¹³As discussed in footnote 2, restrictions on stock ownership were eased in 2001 and so domestic investors can now own B-shares if they have the required foreign currency.

Coals from Newcastle: an evaluation of alternative frameworks for interpreting the development of cost and management accounting in Northeast coal mining during the British Industrial Revolution

Richard K. Fleischman and Richard H. Macve*

Abstract—How have the power and organisational effects of modern accounting systems developed? What is the appropriate theoretical framework for interpreting that development? Researchers in the 'Neoclassical' tradition of 'economic rationalism' focus on tracing how efficiently developments in accounting techniques, from the British Industrial Revolution (BIR) to the present, have been engineered to match the demands for new forms of rational economic management of emergent big business, while those adopting a 'Foucauldian' approach emphasise how it was that the emergence of new practices and knowledge-based discourses for calculating human performance, and for establishing new forms of human accountability, engendered the creation of the modern kind of business organisations through 'disciplinary power'. To evaluate the relative merits of these two frameworks, we re-examine the primary archival evidence about managerial practices in the Northeast BIR coal mines. We focus on two unique features – the cadre of professional managers/consultants (the 'viewers') and the form of direct labour contract – since comparable features have been held to be significant in the rational economic development of sophisticated cost and management accounting techniques in other industries. We find that, while the records include sophisticated valuations of mines and calculations of technological efficiency, surprisingly absent, as compared with 'modern' accounting and managerialism, is any detailed measurement of human performance for setting piece rates and controlling production. Although our particular findings here could be explained within both the 'Neoclassical' and 'Foucauldian' theoretical frameworks, their consistency with the evidence being obtained from other historical sites further questions the adequacy of 'economic rationalism' to explain fully the genesis of modern management and the development of accounting's modern power.

1. Introduction

In attempting to add to our understanding of the power and organisational centrality of modern cost and management accounting, especially in large-scale, increasingly global businesses, at a juncture when accounting's future role is currently being subjected to fundamental questioning, it is neces-

sary to understand the path of its historical development. Accounting historians have recently been debating the relative sophistication and significance of a variety of cost accounting developments in the UK and US during the late 18th and early 19th centuries. The aim of this paper is to contribute to the resolution of the ongoing debate between the 'Neoclassical' (or 'economic rationalist') view and the 'Foucauldian' (or 'disciplinary') view¹ of the nature and significance of these developments, through examining and interpreting the original archives of the coal-mining industry of northeast England, an industry in the vanguard of the British Industrial Revolution (BIR).²

Historians representing the Neoclassical school, through their archival research, have pointed to what they see as growing evidence of the use of accounting for management decision making and for co-ordination of increasingly large-scale industrial enterprises to be found, not only in US private enterprise from the early 19th century (e.g., at the Waltham-Lawrence mills [Tyson, 1998]), but also in major industrial enterprises in Britain from the late 18th century onwards (Boyns and Edwards, 1996, 1997b; Fleischman and Parker, 1997). They

*The authors are, respectively, at John Carroll University and the London School of Economics. They express gratitude to Andersen LLP and to the academic research funds of LSE without whose financial support this research project could not have been undertaken. They are also grateful to Tom McLean and David Oldroyd of Newcastle University for their guidance in reviewing the relevant archives at the Durham Record Office, the Northumberland Record Office (at Morpeth and at North Gosforth), and the Tyne and Wear Archives Service, and to the staffs of those repositories for their assistance. They also thank those who have commented on an earlier draft of the paper, in particular Judith Wale, Marianne Pitts, Prem Sikka, anonymous reviewers for this journal and the Manchester IPA 2000 Conference, and participants in that conference, in the LSE Staff Research Seminar, and in the Eighth World Congress of Accounting Historians, Madrid 2000. Correspondence should be addressed to Professor Macve at the Department of Accounting and Finance, LSE, Houghton Street, London WC2A 2AE, UK. E-mail: R.Macve@lse.ac.uk

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have seen these developments in accounting as rational economic responses to the new management demands of what was to become big business and as early examples of key advances towards what has become current management accounting practice. Given the general recognition that Britain was the cradle of industrialisation, this line of research has largely developed as a refutation of Pollard's oft-quoted conclusion (1965: 248) that 'the practice of using accounts as direct aids to management was not one of the achievements of the British Industrial Revolution' and also as a recognition of a role for UK accounting in the 'management revolution'.

On the other side, among authors who have adopted what has been labelled a Foucauldian approach, are accounting researchers who have reinforced Chandler's (1977) thesis that the 'management revolution' was primarily a US phenomenon, while reinterpreting the nature and causes of that revolution. In particular, they have identified the conditions for the genesis of modern managerialism with 'disciplinary' developments at the US Armory at Springfield in the 1830s and 1840s, and subsequently on the US railroads (Hoskin and Macve, 1988, 1994; Ezzamel et al., 1990) and have begun to trace how these developments, in turn, were disseminated to other industrial concerns and enabled the growth of US 'big business' (Hoskin and Macve, 2000). The influence of engineers who were educated under a new 'disciplinary'³ regime of writing, examining, and grading – at the US Military Academy at West Point from 1817 onwards – has been seen as the catalyst for an accounting and management revolution characterised by new practices and new knowledge-based discourses for calculating *human* performance and for establishing new

forms of *human* accountability, which were later transmitted to the UK, Europe, and beyond. These accounting changes themselves made possible the creation of new kinds of business organisations through their 'disciplinary power' (Hoskin and Macve, 1988), while the indigenous UK developments of this period (and those in other US sites before the new disciplinarity was disseminated there) are seen as historically interesting mainly for their technical aspects rather than for their significance in creating the modern managerial business corporation.

In an attempt to resolve this Neoclassical/Foucauldian debate, researchers from each of the contending schools have revisited the archives collaboratively. Fleischman et al. (1995) studied Boulton & Watt (B&W) and argued that the historical crux, in identifying the discontinuity between early attempts at costings for accountability, decision-making, and control purposes in the new manufacturing industries and what may be seen as the modern managerial approach to accounting, lies in tracing where 'labour standards' were first articulated and systematically implemented – when the focus shifted from machines to men. Such standards introduce new practices and a discourse that extends beyond the engineering standards that assess materials and machine efficiency to the establishment of equivalent norms of human performance for modern managerial control.⁴ It is

³ Disciplinarity in this context refers both to the way in which practices (and, in particular, 'writing, examining, and grading') constitute the control environment and to their being embedded in an expertise in new forms of knowledge (discourses). For further elaboration, see e.g., Hoskin and Macve (1986, 2000).

⁴ Reference to 'labour standards' does not imply the full panoply of labour standard costs and variance analysis that developed as part of the Taylorist efficiency movement of the late 19th/early 20th century (Fleischman et al., 1995: 166–167). Tyson (1998) here missed the point at issue, as discussed in Hoskin and Macve (2000).

⁵ None of this suggests that accounting was not significant before. It clearly was, but nothing like as significant as nowadays in framing the whole discourse of business performance evaluation and therefore action. Neither is it suggested that individuals were not judged before through their accounts. But these were traditionally prominent people, already identified as significant individuals before the accounts were prepared. Such 'stewardship accounting' dates from ancient practice, through medieval estate accounting, to modern times. The *new* (19th century) human performance measurement *created* 'calculable persons' *within* mass populations (Hoskin and Macve, 1986; Miller and O'Leary, 1987).

It is also not suggested here that researchers in the Neoclassical tradition have not been interested in evidence of accounting for human performance and, in particular, accounting techniques for labour control in manufacturing industry (e.g., Boyns and Edwards, 1997b; Boyns et al., 1997). However, no positive findings have yet emerged for our period, even in large-scale works environments where tasks were repetitive and in some respects more measurable in nature, such as the mid-19th century UK iron and steel industry in South Wales (see, for example, Boyns and Edwards, 1996).

¹ The labelling is Loft's (1995). For further elaboration of the role of the Foucauldian approach in modern management accounting theory, see Bhimani (1999). We do not directly address in this paper the third major theoretical framework of recent accounting history which is grounded in 'labour-process' theory and sees the cost of developments in cost and management accounting in the 19th century as being borne by capitalists solely because of the increased extraction of 'surplus value' from labour effected by ever more systematic labour control. As currently articulated (e.g., Hopper and Armstrong, 1991), the labour-process thesis has focused primarily on later 19th century US accounting developments. Given that the evidence to be presented in this paper supports the view of other recent work (e.g., Boyns and Edwards, 1996) that a focus on labour control was not a primary characteristic of BIR accounting, we consider that it is more appropriate to evaluate the limitations of the labour-process thesis in papers that primarily address the 19th century US context (e.g., Fleischman and Tyson, 1996; Hoskin and Macve, 2000).

² We embrace a wider chronological perspective than most for the BIR, 1760–1850. However, since early UK coal mining was in the vanguard of contemporary accounting and business practice even before the BIR (Hatcher, 1993: 305), we have drawn additionally on available information from before 1760.

the first crucial step to inventing the modern, increasingly internalised, *human* accountability, not just of labour but also of all organisational participants, including all ranks of management, in a 'hierarchy of mutual surveillance' that extends throughout the organisation (Ezzamel et al., 1990).⁵

However, Fleischman et al. (1995) found that, although B&W was an engineering firm in the vanguard of BIR accounting practice, the transition from highly sophisticated engineering standards for the material components of constructed steam engines to comparable standards of economic performance and labour efficiency was not achieved there despite an initial, impressive attempt around 1802. The famous piece-rate regime for which the firm has become renowned was found to be an isolated episode that did not presage the birth of modern managerialism.⁶ The historical discontinuity, the crux, which introduced systems of control discipline of the kind that, through internalisation of performance norms, nowadays 'quietly order us about' (Foucault, quoted in Megill, 1979: 493) was still to occur. Consistent with the other archival evidence from the UK in the early 19th century, which illustrates a growing array of cost and management accounting practices being developed during the BIR which are still utilised today, there generally remained an absence of those practices focussed on calculating human performance, a key characteristic of the discourse of modern management action and control routinely embedded in modern organisational structure and strategy.

In response, Boyns and Edwards (1996, 1997a) have in turn criticised this disciplinary view as being too narrow and as ignoring both the range of objectives and achievements of 19th century British accounting, as well as the important differences in the paths of historical development that were followed in the US, the UK, and elsewhere in Europe. They, as well as others (e.g., Tyson, 1998), have argued that the prime focus of research into the management accounting history of this period should continue to be on investigating the variety of ways in which accounting practices were developed to meet the demands of a range of organisational objectives under varying conditions – practices which are still part of the management accountant's toolkit today.

As yet, these various lines of research on 19th century archives have left open whether the most significant developments occurred in the UK or the US. And did the changes in human accountability that Fleischman et al. (1995) regarded as

crucial only emerge essentially in the late 19th /early 20th century US industrial environment, articulated as part of the emerging discourse of Taylorism (Miller and O'Leary, 1987; cf. Shenhav, 1999; Fleischman, 2000), or can they indeed be identified in earlier US practices, such as those introduced at the Springfield Armory (Ezzamel et al., 1990)?

Both Fleischman et al. (1995) and Boyns and Edwards (1996) have called for confirming evidence to support the findings about B&W in a wider application. Boyns and Edwards' own work on the huge ironworks at Dowlais in South Wales (1996, 1997a) has demonstrated that accounting control over labour was not one of the features of the increasingly sophisticated accounting system there in the mid-19th century. Our research here now applies the approach of Fleischman et al. (1995) to examining original archival evidence about mining practices in the Northeast coal mines.

Accounting researchers have recently identified the extractive industries of the late 18th and early 19th centuries, in particular the coal-mining industry in Northeast England, centred on Newcastle upon Tyne, as a hitherto largely neglected source of rich evidence on costing and managerial practices (Oldroyd, 1996, 1999; Fleischman and Parker, 1997; McLean, 1997; Brackenborough et al., 2001). Given the early development of increasingly capital-intensive mining, coupled with coal's own crucial economic significance in providing the raw energy source for rapid expansion of both industry and transportation during the later stages of the BIR, while the mines retained their historical linkage to the 'old order' of the landed estates, it may be tentatively argued that their practices left an enduring cultural legacy which continued strongly to influence the pattern of development of management and accounting practices – not only in the later coal industry but possibly in UK industry more generally (Boyns and Wale, 1996; cf. Napier, 1991).

The mine owners/lessees had continuing traditional requirements for accurate financial accounting of sales output (the *vend**)⁷ for the contractual purposes not only of calculating rentals under lease agreements but also of operating their regional cartel. But particular features of the Northeast mines during the BIR, which might suggest the opportunity for the development of cost and management accounting for purposes of labour control, include the role of a newly emergent professional, managerial cadre of mining engineers (the *viewers**). The viewers, acting both in direct management capacities and as consulting engineers, made sophisticated geological, engineering, and financial assessments of the profitability of alternative decisions about mine sinkings and operations, based both on their direct underground

⁶ See Williams (1999) for further discussion of B&W's use of costs in pricing.

⁷ Coal-mining terminology indicated by an asterisk at first mention is defined in the glossary that appears as Appendix A to this paper.

inspections ('views') of mines and on detailed accounting and statistical records. Moreover, the mines in the Northeast had an almost unique set of labour practices, whereby employment and piece rates for the skilled miners, who were generally directly employed rather than hired by internal sub-contractors as in other coal fields, were for a long period set, and guaranteed, at the annual bindings*. These aspects of managerial control and labour relations are comparable to those in other industries that have been argued by economic rationalists (e.g., Johnson and Kaplan, 1987) to be significant economic factors in the rational early development of more sophisticated cost and management accounting systems, focussed on managing labour cost. The Northeast mines in the BIR period, therefore, provide a particularly interesting test-bed for alternative explanations of the factors that have driven, and the consequences that have resulted from, cost and management accounting changes.⁸

This paper interprets the findings of our own review of the Northeast mining archive in a further effort to evaluate the explanatory power of the Neoclassical and Foucauldian frameworks with regard to developments in BIR cost accounting, and their linkages to modern accounting practices and to modern management in large business organisations. Our examination of the original records shows that detailed accounts were indeed kept of the output and the efficiency of inputs of materials and the use of equipment (horses and engines), and that these data were used for management decision-making and control. In this regard, our findings reinforce the growing evidence of the sophistication of BIR cost accounting back to its origins in the early 18th century. But, while labour was clearly seen by the mine owners and their managers as the major element of cost,⁹ to be minimised as far as possible, surprisingly absent (at least to the modern mind¹⁰) is any correspondingly detailed examination of human performance to provide a scientific determination of what should be a 'fair-day's pay for a fair-day's work' as a basis for setting piece rates, a practice that *has* been identified in particular US contexts, such as the Springfield Armory in the first half of the 19th century (Hoskin and Macve, 1994).

Explanations of the relative lack of sophistication in the accounting for and control of labour productivity, as compared with that for machines and material, can be offered both from a Neoclassical perspective (the economic benefits of greater sophistication at this time and in the circumstances of the mining industry would not have justified the extra costs and the risks of resistance from, often scarce, skilled labour) and from a Foucauldian perspective (the conditions for establishing the necessary practices and engendering the necessary discourse that could observe human

productivity as equivalent to and directly comparable with that of machines had not yet arisen). However, given the presence of the particular characteristics of the mines in the Northeast, which are comparable to those that have been held to be significant in the rational economic development of sophisticated cost and management accounting techniques in other industries (especially the managerial role of the viewers and the form of labour contract coupled with the absence of internal contracting), we suggest that an economic rationalist might have expected *prima facie* to see more development here in accounting for human performance and control of labour than we have in fact been able to find.¹¹

How significant is such a negative finding? While it is unlikely that there can ever be wholly conclusive historical evidence for either the Neoclassical or the Foucauldian view, this evidence from the Northeast mines in the BIR, when taken with similar negative evidence from B&W and Dowlais in the UK, and sites such as the textiles mills in the US, adds another piece to the jigsaw, from which is gradually emerging a picture that suggests that there must have been some unique factor complementary with, but going beyond, economic rationalism, that was necessary for the crucial developments in human accountability to occur in certain key early industrial sites in the US and that more completely explains the genesis of modern management accounting. It is just such a disciplinary factor for which the Foucauldian view offers a theoretical and historical understanding (Hoskin and Macve, 2000).¹²

Further research in both the UK and elsewhere is therefore still needed since each further negative result adds critically to our historical understanding, while it would only take the discovery of one positive result to throw into question the Foucauldians' current hypothesis that the key sites were in the US. Further examination of any such positive case, if found, would of course be needed

⁸ While the scale of operations was often large, with work forces in the hundreds and even thousands, operating conditions and work practices were, however, not those of factory routines. The weight to be attached to these historical differences is discussed further below.

⁹ Church (1986: 501 ff.) estimated that labour cost was of the order of 50% to 75% of total working cost for much of the 19th century.

¹⁰ We accept, of course, that many such accounting and management concepts are part of a modern mentality which cannot be literally translated to earlier times (e.g., Miller and Napier, 1993). However, the interesting historical question is *how far and in what respects* did the practices and discourses of earlier times overlap with our own.

¹¹ It would be wholly circular, perhaps tautological *ex post* rationalisation, for economic rationalists to argue that the absence of accounting development *must* of itself signify the absence of sufficient overall economic benefit to induce such development.

in order to understand fully its historical context and to establish whether it was merely a 'one-off' – such as the B&W case appears to have been – with no linkage to the wider, more general development of modern management.¹³ Nevertheless, if it was established that the case was more likely to be typical of, and related to, other significant developments (as has been argued for the case of the Springfield Armory in the US [Hoskin and Macve, 2000]), such a discovery would then require wholesale revision of the Foucauldians' current disciplinary theorisation of accounting's historical development and of the genesis and nature of accounting's power in modern organisational management.

Clearly, it is impossible to examine every extant archive – and one is, in any event, faced with the loss of so many archives already – but an efficient research strategy will focus, as we have done in the B&W case and here, on cases that provide prominent historical examples of industrial, technological, and economic conditions that might otherwise be expected *a priori* to have favoured the development of the relevant significant advances in accounting and other managerial techniques. Each such 'negative' result will thereby further build confidence in the overall picture through 'replication' of individual 'trials' (e.g., Otley and Pollanen, 2000).¹⁴

We develop the remainder of the paper as follows. The next section provides a brief introduction to the historical background of the BIR coal-mining environment. In Section 3, we analyse the archival evidence from the Northeast coal mines to identify the major purposes for which accounting data were recorded and how they were

used (and equally significantly, not used). We also suggest how this evidence, and the possible reasons for the relative sophistication of the differing accounting techniques and analyses, may be interpreted both from a Neoclassical and, alternatively, from a Foucauldian perspective. In Section 4, we discuss the contribution of our evidence and our interpretations of that evidence to the historical debate over modern cost and management accounting systems, while identifying continuing priorities for further research.

2. The coal-mining environment in the BIR

On Tyneside, coal reigned supreme during the BIR. Output there more than doubled between 1775 and 1830, from nearly three million to nearly seven million tons (Flinn, 1984: 26). The number of operatives employed in the Northeast's coal industry is a speculative guess at best, although Flinn (1984: 363) estimated 13,600 of all grades for the period 1807–1809. Benson (1980: 9) suggested that one-third of all British miners were employed in the Tyneside region. Mining operations there were also on a larger scale than elsewhere. At a time when most mines elsewhere had fewer than 50 operatives, 12 in Northumberland and Durham had more than 200 (Benson, 1980: 11). Some could number a total work force in excess of 2,000.¹⁵

2.1. Managerial organisation

A distinctive feature of the Tyneside coal industry was the degree of organisation among the colliery owners. Of three owners' organisations that spanned the BIR, the most prominent was the Grand Allies, founded in 1726, which has been described by Oldroyd (1996). Various types of accounting records were generated by these cartel-like consortia, which attempted to use monopoly power to maximise profits. Flinn (1984: 262) has suggested that the means of attempting to achieve this end were threefold – the restriction of output, the elimination of price competition, and the control of labour costs.

In terms of output restriction, the participating collieries divided the market in relation to 'the basis', a 'predetermined assumed vend' (Flinn, 1984: 262). Each colliery would be allocated a share based upon its actual production in the previous year, but this could be adjusted for improved methods of working, the opening up of new seams, etc.¹⁶ Overall, it would seem that the cartel was ineffective as a device to control output, but that its greater purpose was to provide a united front for price determination and labour-cost control. The Tyneside masters' organisations amassed a substantial collection of business records that have survived in the archive and document the importance of detailed accounting for output to facilitate

¹² Even without adopting the Foucauldian explanation, Chandler (1977) has recognised that the managerial changes introduced on the early US railroads went far beyond what was necessary for purely economic efficiency.

¹³ Another interesting example of developments that did not lead to a more general and widespread adoption is that of the accounting and management innovations in Spanish factories in the second half of the 18th century. These innovations appear to have come to a halt when the companies collapsed following the French Revolution, which had led the Spanish royal family to adopt a siege mentality that isolated Spain from further connection to modernising influences in the rest of Europe (Carmona et al., 1997; Gutiérrez Hidalgo et al., 2001).

¹⁴ The underlying principle of this approach to the significance of *negative* as much as of *positive* evidence is firmly in keeping with the Popperian tradition of 'falsification' that underlies most formal scientific and empirical research. This paper focusses primarily on the evidential issues. For further elaboration of the theoretical arguments for the Foucauldian position, see Hoskin and Macve (2000).

¹⁵ In Johnson's view book, it is reported for Hetton Colliery in 1827 'that they have bound Hewers 560 and Putters etc. in proportion' (DF/WF/28.1: 431). Flinn (1984: 363) estimated as a rule of thumb that hewers would constitute approximately a quarter of the total colliery work force in the early 19th century.

the operation of the contractual requirements of the cartel.

Another distinctive feature of the management of the Northeast collieries was the role of the 'viewers'. These professional mining engineers variously combined the roles of managers, engineers, surveyors, accountants, and agents, and dealt with all stages of mining from initial exploration to the sale of coal to ships bound for London. They could either be resident with a single enterprise or act as consultants to many mines. While the landowners, or the lessees of the mining rights, provided most of the initial capital, the viewers provided the management expertise. They served as arbiters in wage disputes, as valuers of mining interests, and as referees in rental disputes and in the determination of the allocation of the vend (Flinn, 1984: 57–68; Church, 1986: 409–415, 454–456). One of the most valuable features of the archive is the survival of 'view books' in which are set out, inter alia, viewers' computations of the profitability of prospective mine sinkings and operations, as well as analyses of materials and equipment (particularly horses and engines) with respect to their productive capacity and efficiency of utilisation. The viewers' crucial role in management makes the investigation of how far they developed sophisticated accounting practices a question of particular historical significance.¹⁷

2.2. *Labour management: direct employment vs. internal contracting*

It appears that the processes that determined contractual arrangements varied considerably between mining districts across Britain and were the product of local custom. A major geological difference between the Northeastern coal fields and elsewhere may have had potential significance for the development of differing labour management systems. In Wales, the Midlands, Lancashire, and Yorkshire, the 'longwall' system of extraction meant that the hewers* collectively confronted the same coal face, while in the Northeast's 'bord and pillar' method, the hewer worked alone in a far more constricted area (Benson, 1980: 54; Flinn, 1984: 55). Whether or not differences in ore extraction were a pivotal factor,¹⁸ the fact remains that labour management was distinctive in the Northeast. Here the individual workers were employed directly by the owners or lessees of the mine and were paid piece rates for output (the hewers) or by the shift/day (many ancillary workers) (Flinn, 1984: 374–375).

Elsewhere, by contrast, the labour management function was subcontracted to a charter-master* or butty, who contracted to supply coal at an agreed price. It was left to the butty to divide his receipts between remuneration for himself and the individual workmen. While such contracting was experi-

mented with in the Durham/Newcastle area, it did not survive the 1810s. Owners found it 'troublesome, expensive, and ... unproductive' (Flinn, 1984: 57).

Benson (1980: 69) observed that under the butty system in the Black Country, the hewers were paid for an amount of time, contracted with the butty, based on what would be required to hew a given volume of coal. In Scotland, the 'darg' was a daily output expectation multiplied by a rate per ton. Welbourne (1923: 16) wrote of a less formalised arrangement in Tyneside where hewers, directly employed and paid for output not time, 'came away when they were satisfied with their day's work', a satisfaction not measured by time but by forward progress. Mine owners and lessees were particularly concerned that required daily output levels should be achieved by the hewers so as to ensure the productive daily work of the army of other mining labourers. The owners/lessees attempted to counteract the hewers' traditional flexibility and freedom with respect to daily attendance and hours worked (Flinn, 1984: 367–369; Hatcher, 1993: 386 ff.) through the inducement of piece rates and the establishment of output quotas, together with fines for absenteeism. But these attempts at work discipline were often of limited success.¹⁹

Ashton and Sykes (1929: 163–165) concluded that, generally, hewers' total remuneration was determined on the basis of their achieving a customary output for a normal day's work, known in Northumberland and Durham as the 'stint'. In 1765, the stint required a total of six to seven hours per day, but this lengthened to eight to ten hours in the 1820s. The stint was raised or lowered many times during the first half of the 19th century as wages and prices rose and fell (Church, 1986: 557). However, while the underlying concept is

¹⁶ Such arrangements provided both incentives and opportunities for owners to overstate the productive potential of their pits in order to gain a larger allocation. One of the viewers' roles was to act as referees in disputes between owners as to the fair distribution of the vend, requiring them to conduct inspections of the relevant mines in order to audit the claims being made as to their productive capacity (DF/WF/28.1: 427, 431–433, 520; DF/WF/28.3: 28). Owners would still not hesitate to write letters to the referees pointing out post-audit additions and improvements to workings which ought to be taken into account in determining their share (DF/WF/28.1: 426).

¹⁷ Their view books provide the all-important interpretations of how they were using the accounting numbers and other statistics that they compiled or that were furnished to them (Hoskin and Macve, 2000; Brackenborough et al., 2001).

¹⁸ Church (1986: 274–275) argued that 'the crucial difference in work organization came only with longwall machine mining', which was only gradually introduced in the late 19th century.

¹⁹ Absenteeism (for example, the long tradition of regular celebration of 'St. Monday') was a particular problem in mining as in other industries (Flinn, 1984: 370–374; Hatcher, 1993: 396).

simple, it is far from clear how it was operationalised. The detailed calculations, by which determination was made of the current normal day's output and how it should be calibrated to the differing geological and other working conditions in different mines, and thereby to the piece rates to be fixed for hewing in each location, remain a mystifying absence in the surviving archive (as we discuss further below).²⁰

The form of organisation of labour has generally been regarded by business historians as a crucial feature in the development of early cost accounting. Johnson and Kaplan (1987: 23, 47–51) argued that direct managerial determination of labour productivity for setting piece rates and labour control only become important in manufacturing industry after the demise of internal subcontracting late in the 19th century in the US. Littler (1982: 67) has argued that 'systems of internal contract acted as a substitute for accounting'. Similarly in the UK, Boyns and Edwards (1996) offered, as an explanation of the lack of any development of accounting control over labour at Dowlais in the mid-19th century, the argument that this was a rational evaluation that the costs would outweigh the benefits given, *inter alia*, the system of internal subcontracting.

However, Fleischman and Tyson (1996) have questioned – in the context of the US-based Waltham Watch Company – whether there is a simple linkage between the abandonment of internal contracting and the intensification of cost accounting both to establish labour piece rates directly and to measure and control labour output. In the UK, the 1802 piece-rate exercise at B&W is another example of an (albeit temporary) intensified managerial focus on labour costs being used to determine fair prices, not for directly employed workers but to be offered to the internal contractors (Fleischman et al., 1995).

Nevertheless, it is still the case that there is general agreement among economic and business historians that in the absence of internal contracting there is clearly a strong economic pressure, at least in factory environments, for the development of cost accounting as a tool for the measurement and control of labour cost and labour performance. The hierarchical nature of pit labour in the Northeast around 1800, with the hewers' special position reinforced by long apprenticeship and kinship ties, did not constitute the conditions for the introduction of a factory-style organisation of labour (Benson, 1980: 54). Nevertheless, the unique arrangement in the Northeast mines of direct employment of the work force (with the hewers, putters* and certain other underground workers on piece rates, and other workers on day rates [Flinn, 1984: 374–375]) does make this region of particular interest when investigating how far there was

any emergence of managerial control over labour productivity through accounting.²¹

While the mine owners/lessees in the Northeast could generally be confident of the skill of their key workers (given, *inter alia*, the widespread handing down of hewing jobs from father to son), their prime concern was to overcome the miners' natural temptation to reduce the extreme physical demands of their work by working at less than full effort. Paying piece rates for output attempted to minimise this possibility.²² Both sides were, of course, also concerned not to be cheated, whether by the miners sending inferior material or underweight corves* to the surface or by the owners' representatives either under-recording the amounts sent up or unfairly rejecting output of good quality.²³

2.3. Binding

The annual binding of miners was a distinctive aspect of the Northeast's coal-mining environment, reflecting its unique practice of direct employment rather than leaving organisation of labour to internal contractors as was done through the butty system in other coal fields. Binding was, in the first instance, the attempt of mine owners to guarantee a supply of (often scarce) skilled labour, but the price in terms of the binding bounty granted on signing the bond was frequently high. In the second half of the 18th century, 6d or 1s was the usual sum paid for the annual indenture, but in boom times and when labour was scarce, as during the frequent wars of the period, the amount of binding money fluctuated greatly and at its highest represented half the normal annual wage of the

²⁰ The concept of the stint appears to have degenerated by the 1840s to 'a nominal unit of account for piecework' (Mitchell, 1984: 131).

²¹ Compare the Springfield Armory at the beginning of the 19th century which, right from the beginning, had its own managed work force, even though inside contracting was normal for the industry and was used at Harper's Ferry Armory. At Springfield detailed labour control was introduced by West Point alumni engineers (Ezzamel et al., 1990).

²² Only extremely limited direct supervision of hewers was possible given the physical working environment (Mitchell, 1984: 101–102). However, piece-rate systems carried the disadvantage of allowing workers to exercise their own labour/leisure trade-off, giving rise to uneven patterns of work during each pay (e.g., Flinn, 1984: 370 ff.; Church, 1986: 242–243). It was necessary to find ways of keeping up effort. Thus, for example, in a report on the production potential of Thornley Colliery in 1842 for the purposes of the allocation of the vend, the viewer George Johnson noted that, while previous production records had been very considerably lower, 'A considerable quantity of Coal has lately been worked in the pillars of the 5/4 seam & Mr. Heckles considers at as cheap a rate as in the Whole Mine, hewing price in pillars 6/- per score. Mr. H. says, *if exertion is used*, they can work from the 5/4 Coal 265 scores daily, viz. A. Pit 90, B. Pit 100 and D. Pit 75 scores and from the Harvey Seam 80 scores may be drawn daily....Work the Harvey Seam with Davy Lamps, & the men *not allowed to use Gunpowder*' (DF/WF/28.3: 649, emphases added).

miners (Flinn, 1984: 353–356). In spite of the effort to control labour movement, a high level of migration was evident, both within a particular coal field and between districts, since miners were permitted by law to migrate between bindings (Flinn, 1984: 342).²⁴

The demise of binding in the Northeast coal field began with a new (or reorganised) combination of owners, established in 1805 in response to what they saw as the intolerable 'panic' levels of binding money and associated inducements that had been paid in 1804, following the resumption of war. Limitation came to be placed on binding money as the owners required a greater control over the stability and predictability of their labour costs (Taylor, 1960: 229). However, the practice held on in Northumberland until the 1840s and in parts of County Durham for three decades beyond (Ashton and Sykes, 1929: 98; Church, 1986: 236–237, 260–261). During the period when binding was prevalent in the Northeast, there was clearly an added incentive for mine owners/lessees to exploit as far as possible the productive potential of the labour they were reciprocally bound to employ.

2.4. Accounting practices

In the economic environment of BIR coal mining in the Northeast, as outlined above, what management solutions and related accounting practices were required? It was a setting in which the landowners who let out their mining rights needed to assess how much rent they could charge (while guarding against excessive overworking of their mineral rights), while lessees needed to know how much they could afford. The prevailing form of lease in the Northeast combined a minimum fixed rent with a royalty (or 'tentale rent') on output (Fordyce, 1860; Flinn, 1984: 46), so lessors needed to monitor output to avoid being cheated of rent due through under-recording. Mine owners/lessees also needed to concentrate attention upon the ever-expanding capital requirements for the extraction of coal from deeper and deeper seams, and to evaluate the costs and benefits of changes in technology (e.g., from horse-driven to steam-driven water pumps).

While technological changes in coal-face working (the major element of working cost) were minor until the advent of coal-cutting machinery in the late 19th century, there were some choices to be made. If gunpowder was used, a greater quantity of coal could be brought down more quickly, but the trade-off, in addition to the safety problems, was that the coals would be smaller and therefore of less value (Flinn, 1984: 92; Mitchell, 1984: 75–76; Church, 1986: 340).²⁵ There were different ways of working the coal face (Church, 1986: 328 ff.). The owners/lessees relied for expert advice and for operational management on the new pro-

fessional class of viewers. The unique form of labour contract, the bond, was designed to provide 'sticks and carrots' for the colliers, particularly the hewers. While the illegality of unions until 1825 and the long tradition of a unified owners' association in the region presented major hurdles to organised labour movements, the custom of the annual binding is nevertheless generally held to have engendered an expertise in collective bargaining which provided 'a valuable education for both employers and workers in the decades running up to the creation of formal trade unions' (Flinn, 1984: 357).

While labour practices in the Northeast coal fields were largely unique over most of the BIR period – and it is notoriously difficult to establish general patterns and causes of adoption of particular employment practices even today (Marsden, 1986, cf. 1999), let alone historically (Boyns and Edwards, 1996: 52–54) – it may be argued that mine owners and lessees increasingly had similar concerns to other BIR entrepreneurs. They were increasingly faced with the problem of how to ensure the most efficient exploitation of fixed resources that had required a massive outlay of capital expenditure. Boyns and Edwards (1996: 52–53) have quoted the frustration of the managers at Dowlais in South Wales at the difficulty of securing continuous, regular working of their furnaces and mines when faced with an ill-disciplined and often drunken work force.²⁶ While the capital sums expended in mining did not yet reach the scale of later industrial enterprises and certainly not that of the early US railroads (Schmitz, 1993: 12–16), the costs of winning pits and of purchasing the steam engines, whose pumping capacity in turn enabled ever deeper and more costly sinkings to be undertaken, were escalating rapidly.²⁷ As the

²³ The role of the 'kekers' or checkers was particularly contentious as they could impose fines as well as deprive hewers of piece rates (Flinn, 1984: 379). It was not unknown for the miners to attempt to cheat each other by bribing or intimidating the boy putters to 'chalk' other hewers' corves as theirs or by exchanging other hewers' identifying tokens for their own (Benson, 1980: 70–71).

²⁴ Although the particulars of binding gave rise to some labour disputes, the miners enjoyed many advantages from the process. The typical one-year indenture period established settlement under the Poor Laws for migrant labourers, although in some districts employers fixed the binding period at 11 months, 15 days to deprive these workers of settlement (Webb, 1921: 8). Binding also provided miners immunity from military service and protection from discharge during slack periods (Ashton and Sykes, 1929: 84–85). In the early 19th century, the binding process afforded miners the opportunity to bargain collectively for wages and conditions of employment at a time when the Combination Acts prohibited other groups of workers from union activity (Flinn, 1984: 357).

²⁵ Mitchell (1984: 137) also commented that once the use of gunpowder became widespread in the 1840s, a greater organisation of hewing labour into shifts, with an overall reduction of hewers' hours, was developed in the Northeast.

archive shows, how to improve speed and efficiency of movement of hewn coal from the coal face to the pithead through replacing horses with engines, or engines with more sophisticated engines, was a major preoccupation of the viewers' financial calculations, based on accounting records and statistics. But increasing disciplinary control over labour performance through accounting did not yet enter the equation. Labour was certainly considered a significant cost in the accounts, to be minimised as far as possible, while labour activity was to be maximised by whatever means might be available. However, labour efficiency was not yet a scientific input to be optimised through objective calculation.

We now turn to the archive in order to investigate in closer detail how far these particular conditions, each of which required forms of accounting, may be seen to have engendered innovative accounting developments of a recognisably modern, managerial kind.

3. Analysis of the archival evidence

The surviving business records of the Tyneside coal industry during the BIR are, for several reasons, more plentiful than for corresponding coal enterprises elsewhere in the UK. First, the mining concerns spanned a wider geographic region than most other leading coal districts. Second, coal mining was the dominant economic activity whereas elsewhere it was secondary to iron (e.g., South Wales and the Black Country) or cotton textiles (Lancashire). Third, coal-mining operations were more substantial on Tyneside, thus requiring more record keeping and making accounting more affordable. Finally, the high degree of collaboration among mine owners resulted in record keeping and data collection for purposes of controlling the regional coal and labour markets.²⁸

In order to facilitate our analysis of the evidence and to point up the Foucauldian/Neoclassical interpretations, we have organised the selection that we have made from the extensive archival material that we have examined into two sections. First, we will consider the accounting techniques that were not directly related to labour; data of particular interest to the economic rationalist insofar as they are seen to demonstrate a purposeful or sophisticated accounting that informed business decision making as mining technology advanced. Second, we will examine evidence related to labour cost and control in order to evaluate whether a discontinuity between the pre-modern and modern occurred in this environment, such as has been claimed for the Springfield Armory in the US (Hoskin and Macve, 1988, 1994, 2000) but not for B&W or for Dowlais in the UK (Fleischman et al., 1995; Boyns and Edwards, 1996). Foucauldian scholars particularly privilege labour control as a

particular instance of an increasingly general control over all organisational participants, including management, and as contributing significantly to the development of that human calculability which, it is argued, constitutes the genesis of modern managerialism and the distinctive power of modern accounting.²⁹

3.1. Accounting techniques (not specifically related to labour)

The aim of this section is to present materials that contribute to the project of Neoclassical accounting historians in recent years,³⁰ which seeks to rehabilitate BIR cost accounting and to demonstrate that it exhibited advances in methods that were previously generally thought not to have occurred until the end of the 19th century and the early 20th century with the age of Taylor and scientific management.³¹

From early BIR records, it is apparent that mining entrepreneurs in the Tyneside region used accounting numbers to gauge and improve the profitability of their ventures. Surviving records illustrate a variety of approaches including expense analysis, comparative extraction and operational profitability calculations, mine valuations, return-on-capital analysis for new investment, revenue forecasting, and monitoring of the 'vend'.

²⁶ Similar labour problems were faced in the US armories (Hoskin and Macve, 1994) and in the US textile mills (Hoskin and Macve, 1996). Indeed, the labour history of the BIR, as in other countries, was almost universally one of attempting to impose factory discipline on a recalcitrant work force (Pollard, 1965: 206–208).

²⁷ As with other increasingly capital-intensive industries, the capitalists' desire to maximise their return, given their sunk fixed investment, brought the dangers of 'ruinous competition' through price cutting (Best, 1990: 18–19, 49–50), which were countered by the formation of the mine-owners' cartels to attempt to regulate both output (the vend) and labour costs (through standardising binding practices). Individual owners faced the need to balance effort devoted to productivity improvements against the restrictions on increasing their output imposed by the allocation of the vend. Owners also had to weigh the collective advantages of the cartel arrangements against their individual advantage from maximising their share within the overall limits set or from opportunistically circumventing the system.

²⁸ The archives of Tyneside and Wearside coal-mining enterprises are housed in the Durham, Northumberland, and Tyne and Wear repositories. An extensive and detailed description of the contents of the surviving business records is provided in Fleischman and Parker (1997), and so is not repeated here. Additionally, the authors thank David Oldroyd of Newcastle University for pointing out a new archive for the Wylam Colliery held at the Northumberland Record Office at North Gosforth, still in the cataloguing process. A first look has not revealed any costing practices markedly different from those described below.

²⁹ To the Neoclassicist, however, labour control would be but a single facet, not particularly privileged, of the more general question of whether or not the developments in accounting were appropriate to the purposes of economically rational entrepreneurs.

Expenses were typically tracked on fortnightly production reports known as pit bills* and pay bills*. These expense records appear to have been kept more carefully in the Durham vicinity than elsewhere. There survives, for example, a continuous series of pit and pay bills for the Ouston Colliery from 1816 through the 1840s (NCB 12/1). In these documents, the cost of each extractive process is provided for each of the 26 pay periods yearly and an annual cost per score* computed for each process.

At the Tyne and Wear archives, there are two large compendia of viewers' records that span nearly three-quarters of a century. One is a volume titled 'Correspondence, Valuations, Reports, etc', dated 1776–1839 (DX 198/1); the other a view

book of George Johnson in two volumes plus indices which covers 1828–1848 (DF/WF/28.1–4). These collections include a substantial quantity of expense estimates and production reports, estimates for winning* and working, and expenses of leading* the ore from the mines to the staiths*. They provide an extensive record of costs, including spreading winning costs over production. Once a mine began operations, there remained a continuous need to open new workings and shafts for access and ventilation as the mining proceeded underground, what Flinn (1984: 195–197) has called 'running investment'. At the Murton Colliery in 1803, a 2d per chaldron* cost, 'Undertakers to sink a New Pit during the Term', reflected an awareness of these future common-cost allocations in calculating estimates of production costs. It was also typical for these costings to include a line item for 'damage(d) ground', as landowners commonly charged a separate element of rent for such land (DX 198.1: 72; DF/WF/28.1: 332–334).³²

Comparative costings were a prominent feature in the coal-mining archives from the earliest days. The Grand Allies' minute book contains a pre-BIR entry (circa 1727) of a comparative costing per ten* for the raising and leading of one thousand tens as between 'the partnership' undertaking it or by paying 'Mr Pitts', the latter's total cost per ten of £6/5/2d being cheaper. The computation includes a 4/6d allocation for interest at 10% on the capital infrastructure cost of £2,500 and an averaged 4s per ten charge for 'Stock in Trade (besides all hazards) £4,000' (presumably computed at 5%) (NRO 3410/GA/2: 14–15). The minute book also contains a number of comparative costings from the 1730s, including the cost 'per tenn' of working Heaton (£6/12/4d) and Long Benton (£6/19/4d) in 1735 (p. 98). A computation of the relative profit margins per ten at Long Benton, Gateshead Park, and Salt Meadows (pp. 48–49) shows that working the latter two sites would yield a total of £261,253/2/6d, against £163,800 expected from working Long Benton alone.

While there is a substantial volume of comparative costing of alternative methods for different processes, such as drawing* and leading (e.g., DX 198/1: 104–105, 688–691), there seems to be a lack of corresponding attention to internal comparisons of actual operations.³³ However, an estimate of costs at various pits belonging to the Mount Moor Colliery (DX 198/1: 641–645) in the period 1790–1795 appears to indicate that cost comparisons could serve a useful business purpose. Here 33 expense categories were costed to the farthing. This analysis reflected a substantial variation in mining costs as between Swan Pit (seam 1 = 7/1½d per chaldron, seam 2 = 7/9d), Bounder Pit (7/0d), Gate Pit (6/6¼d), and Way Pit (6/7¼d). (A final cost for Spring Pit [4/9d] is much lower as it excludes

³⁰ From the Foucauldian viewpoint, by contrast, this evidence is of secondary interest as, while these technological developments were impressive and may have been economically significant, they did not yet contribute to the development of human calculability. However, the evidence here as to the wide range of advances in accounting methods does serve to highlight the absence of an equivalent advance in accounting control over labour productivity.

³¹ There is, however, a major theoretical difficulty with this Neoclassical approach, given that it starts from a premise that the array of modern accounting practices represents a set of useful tools that assist management decision making and control. It sees the historical research question to be the need to investigate when economic and industrial developments reached a stage where these various practices were introduced as a rational response to a business need. But it has often been argued that many of these practices even today have no obvious inherent economic value; indeed, some of them have been frequently criticised as being detrimental to rational economic management (e.g., Coase, 1938; Johnson and Kaplan, 1987). From this perspective, the historical question is how the emergence of these practices, initially perhaps for quite different reasons, changed the discourse of management so that they became an integral part of modern management knowledge and power structures and, indeed, were inherent in the formation of those structures. Such an approach characterises the Foucauldian viewpoint. How did these practices, within a new discourse that objectified human performance and engendered a disciplinary power, become part of the new range of calculative practices that formed the essential glue of modern organisational design and communication and of management control? Here is the crucial significance of developments in the disciplinary process of accounting for labour in manufacturing industries (cf. Shenhav, 1999). For further debate of the paradoxes that Foucauldians see within the economic rationalist approach to explaining developments in cost and management accounting, see Hoskin and Macve (2000) and contrast the responses thereto by Boyns and Edwards (2000) and Tyson (2000).

³² Presumably the rental charged reflected loss of agricultural earnings from such land and/or an estimate of the cost of its reinstatement at the termination of the lease. We cannot tell if the lessees may have been making an ongoing provision for any further reinstatement liability that would be finally adjusted or eliminated when a realistic estimate of the restoration cost had been reached.

³³ An 1827 costing for two seams of the High Main Coal (the Hutton seam cost 7/3d per chaldron and the Maudlin seam 8/1½d) (DX 198/1: 529) was not intended for comparative purposes as overleaf the two totals were simply combined before the common costs for the whole mine were added.

any costs for leading 'from the Pits to the Staith' or for 'interest on the Stock for Horses, Hay, Corn', ending instead with 'Setting on at the Shaft...1½d'.) At the other end of our period, a yield comparison was made at Stella Coal in the 1840s to test the percentage of good coals extracted from the Towneley (42.647%) and Stella (40.260%) seams respectively (NCB 1/SC 478: 56–57).

In addition to the costing and profitability calculations already noted, concern with the basic physical and geological conditions of mine winnings and workings permeate the extant records, gradually supplemented with increasingly sophisticated engineering calculations of mechanical efficiency. While there survives an 'accounting of boring' for 1768 at the Urpeth Colliery, a purely physical account in which the type of rock encountered at various depths is recorded in fathoms, yards, feet, and inches (WAT 1/5/15),³⁴ there is an impressively detailed 1752 estimate of the 'expense of cribbing* and planking made upon 2 fathoms or a 12 foot length of tubb* of 7 Feet diameter' (WAT 1/5/7). The Grand Allies appeared more concerned with the 'expense of boring' than the physical properties as a 1738 minute-book entry sets the cost at 5s per fathom for the first ten fathoms, then an additional 5s for each five fathoms (NRO 3410/GA/2:46).

A relatively sophisticated view of incremental costs is revealed in an 1802 estimate of the cost of a new winning at Angerton, which would require installing an engine to lift water 10 fathoms 'after the Pit is sunk'. It was noted that the engine would be used 'to work 1 pair of Grey Stones for grinding corn' in the meantime (DX 198.1: 144–5).

Typical of an emphasis upon productive potential given existing technology is the analysis for the Hetton Colliery in 1827, given in the Johnson view book in the context of determining maximum output for the purpose of the vend allocation (DF/WF/28.1:441):

'To the bottom of this Inclined Plane, the Coals are brought by Horses; the Engine drags 8 Rollys up at a time, each Rolly carrying 3 Corves, and takes them from the foot, to the Head of the Plane in 7 minutes; but allowing for time of Changing, and casual Stoppages, suppose 12 minutes to be reckoned for each set of Rolles; and at this rate the performance will be 6 Scores an Hour'.

Newcastle-area mining records contain a number of colliery valuations undertaken by viewers. While these analyses were on occasion restricted to estimated mineral reserves, they were more typically a total valuation of the colliery. Here one frequent feature, not in evidence in Fleischman and Parker's (1992) study of the coaling operations of iron companies, was the use of risk-adjusted rates of return on capital investment. In the examples

we have examined, these rates ranged from 6% to 15%.³⁵ There is included for Hetton Colliery in 1823 an interesting 'what-if' calculation which gives alternative values depending upon whether a new pit had to be sunk after ten or twenty years, adjusted for the differing present values of the future outlays (DX 198.1: 568–573).

In respect of the Ashington Coal Company (NCB/A5/4), there is an 1843 report from Turner estimating the cost of winning and probable profit at Black Close, a property of the Duke of Portland. While the report is written clearly in an elegant hand, the numbers are badly rounded and the arithmetic is shocking. However, a winning cost totalling £13,000 and then an annual bottom-line profit of £2,302 were reckoned for sales of 20,000 chaldrons (the costs developed from 'a careful estimate and comparison with the neighbouring collieries'), representing a 17½% return on capital. Then a sensitivity analysis was done of the effect of a new railway link to the Tyne, which indicated that sales could now be 30,000 chaldrons at no extra initial capital cost. Annual sales value and costs would now both be higher, with overall annual profit of £3,429 and return on capital '20½% nearly' (*sic* – should be 26½%). We cannot tell how far the decision usefulness of this innovative 'what-if' analysis was handicapped by its lazy costing and poor numeracy.

In the Durham area, the Stella Coal Company's management in the 1830s and 1840s was extremely concerned about the costs of capital improvements. An intricate differential cost analysis associated with the sinking of the Emma Pit is described in detail in Fleischman and Parker (1997: 119–121). The company solicited multiple estimates for improvements related to engines and transport. Costings were undertaken to compare transport options and motive power sources (machines or horses). Tender offers were required for capital investment opportunities, such as matériel provisioning, engine upgrades, and construction. The Stella archive is sufficiently complete to allow the researcher to establish linkages between the *ex ante* estimates and the business decisions based upon those estimates and tender offers. This dominant concern with capital expenditure control and major operational decisions on expansion or contraction stands in marked contrast to the company's relative inattention to labour and its cost control (other than in terms of broad categories of direct and indirect costs) as discussed further below.

As already noted, a distinctive feature of

³⁴ A similar survival a half-century later for the Jesmond account (DF/WF/30/12) likewise documents the physical properties of new borings without mention of the attendant costs.

³⁵ For a fuller discussion of the viewers' use of discount rates, see now Brackenborough et al. (2001).

Northeast coal mining, not in evidence elsewhere in the UK, was the organised attempt of the owners in the region to control the sales market through collective action. The earliest collusive effort, that of the Grand Allies, saw the accumulation of a significant volume of statistical data to administer the division of the wholesale coal market, mainly comprising distribution by sea to London. There are a number of agreements in evidence from the 1730s reflecting this distribution. The format typically included the agreed-upon vend of different coal varieties for a particular year, followed by additional columns charting actual sales and the negotiated quota for the succeeding year. In one such marketing arrangement, 22 collieries participated. Nineteen of these failed to sell their allotted volume, while three exceeded their quotas (NRO 3410/GA/2:80). The allocations changed from year to year, and the view books contain extensive workings, returns from questionnaires, notes on mine visits, and reports submitted to the owners' association in respect of the settlement of disputes over how the vend should be allocated between collieries (DF/WF/28.1: 398–520). The minute books of the 'Committee of Coal Owners for the Rivers Tyne & Wear' from 1805–1826 (NRO 263) provide further evidence of this communal control. There appear yearly statistics on chaldrons vended and monthly selling prices.

There is also evidence of how the mine owners exercised control in the labour market concomitant with their control over output and the division of sales. In the next section we look more closely at accounting's role in the control of labour cost, but the significant observation that we carry forward from this review of the other aspects of colliery costings and business statistics is that the BIR Northeast coal mines exhibit a range of advances in accounting methods appropriate to the changing economic and technological conditions they faced. Since advances of this kind are consistent with both Neoclassical and Foucauldian interpretations of accounting developments, it is therefore all the more necessary to explain why there does not seem to have been an equivalent advance in *human* accountability and, in particular, in accounting control over labour productivity. Here the interpretations will differ.

3.2. *Accounting and the control of labour cost*

By contrast with the sophisticated estimating and accounting for geological and engineering costs, what is most noticeable about the treatment of labour costs in the mining records is the relative lack of attention to and sophistication in assessing labour productivity. However, there are several examples of archival evidence reflecting a concern with controlling labour costs.

Monthly expenses at the Birtley Mine of George

Humble & Co. for the late 1760s and early 1770s (NCB 2/4) included various mining functions charged at a going piece rate. These charges were annually amended, as might be expected in coal mining since the bindings were an annual event that would naturally occasion changes in piece rates. Nevertheless, they provide a marked contrast with the inflexibility evident in the system at B&W 40 years later (where rates remained unchanged for several years [Fleischman et al., 1995]). The rate for hewing, for example, fluctuated from 1/10d per score in December 1763, to 2/6d in October 1766, and 2/4d in February 1771. Meanwhile, the cost for drawing reflected a related but distinct pattern – 8d per score in December 1763, 1/6d in December 1765, 1/8d in December 1769, and 4/6d per shift (a change from an output-based to a time-based measure)³⁶ in February 1771. It is relevant to note that while the fluctuations for these two activities moved up and down in approximate tandem, amendments did not occur at precisely the same point in time. Thus, hewing rates changed most typically in October, the binding date, while variations in drawing piece rates were presumably more influenced by differences in seam conditions and depths.

Some 1783 colliers' bonds for the Walker Colliery (NRO 3410/WAT/1/3) give the binding date as October and the binding pay a modest 1s. The various stipulated piece rates made some allowance for seam quality and the narrowness of the work area. There was also provision for headway pay. There was a 1s per day fine for not showing up for work and a 6d per corve abatement for poor coals. A procedure was defined for resolving disputes over the measuring of corves: seven days' notice was required and inspection was to be done by hewers chosen by the employees and approved by the viewers. Finally, pay for day workers was based upon a 'reasonable Dayswork', as defined by the employers. Similarly, bonds for Newbottle Bourn Moor Mine in County Durham, drawn up by the administrators of the estate of John Nesham in the years around 1804 to 1808, provide that the drivers 'shall and will drive such Quantities of Corfes of Coals & at such distances as shall be thought a reasonable days Work by the said Admors. or their Agents' (TWAS 65/2077/box 4823 [1292]).

Pencil notes on documents written in ink are sometimes used to amend accounting data to reflect additional information. Some Stella pay sheets for 1839 (NCB 1/SC 264) exist which record the days worked by employees, almost always in whole days. However, notations in pencil indicate days and partial days not worked, some-

³⁶ This datum, and the rate for hewing at the same date, may relate to a price paid for a particular project.

times measured in quarter days. On the reverse of the sheet, the pay was originally calculated on the basis of expected full days, subsequently reduced for the missed days to arrive at total pay. Another pencil and ink exercise for South Hetton Colliery in 1834 saw estimates of production levels in chaldrons by its viewer, Thomas Hall, entered into the memorandum book in ink. Noted in pencil were variances in the subsequent actual volume of output. It appears that notice was taken of differences between estimates and actuals, although no explanations (e.g., labour inefficiencies) are provided for production shortfalls (NCB 1/TH/15: 172).

Owners were naturally concerned to reduce labour costs wherever possible. The Stella archive contains a proposal from the 1840s for 10 redundancies at Towneley Colliery. An estimated saving of £6/1/10d per week was projected (NCB 1/SC 465, 478). Accounting numbers were also deployed at Stella Coal for abandonment decisions. In 1844, Robert Simpson, Stella's owner/manager, recommended the closing of the Towneley Colliery. Although labour was cheaper there than at any other installation, the costs associated with its non-central location were deemed prohibitive. It was observed that the work force could be moved to Star Gate. To obtain the same amount of coal as before the proposed abandonment, Simpson suggested opening a new seam at Stella Freehold and increasing the number of days worked beyond the then current nine per fortnight. His forecast was for an annual saving of £865/9/0d, including a 1/9d per score reduction in costs of raising, a relocation of five horses, a reduction in rents and royalties, a diminished use of sundry items (ropes, oil, and grease), the redundancy of a wagonway* wright, and reduced poor rates (NCB 1/SC 515). In 1849, Simpson did a similar analysis to determine at which pit work should be curtailed, occasioned by the slow sales the firm was facing (NCB 1/SC 516).

The accounting at Cowpen Colliery (ZRI/35/15) included a redundancy recommendation as part of a comparison of costs of raising for 1832 and 1833. It was calculated that the 29,375 chaldrons raised in 1832 cost on average 11/1½d, while the next year's production was significantly reduced (17,548 chaldrons) but with unit costs significantly higher at 13/9½d per chaldron. The accountant had two observations to make on these data. First, £1,105 could have been saved in 1833 had 13 pit workers been discharged, a course of action indicated by the lower volume of production. This saving included their £45 yearly salary, plus savings on materials they consumed. Had these redundancies been made, the 1833 cost per chaldron would have been reduced to 12/6½d. Second, it was concluded on the basis of these statistics that production should never be allowed to dip below 20,000 chaldrons annually, thus exhibiting a good appre-

ciation of the differing impacts of variable and fixed costs.

Certain documents in the Watson archives are reflective of a greater attention to labour-based statistics than we have seen elsewhere in the extractive industry. In WAT 1/5/88 (1830–1831), for example, the average weekly wages of hewers at Cowpen Colliery are segregated into three operative categories, at 19/7¼d, 17/5¼d, and 11/10½d respectively. Unfortunately, there is no information regarding the method by which miners were assigned in this classification scheme.

As previously discussed, the owners also sought to exercise communal control over the labour market. An immense spreadsheet survives, dated 1805, on which are logged the numbers of hewers bound to and from each colliery on the Tyne and Blyth (WAT 1/5/31a). There also appears in this record the formula used in 1805 to determine the number of pitmen that could be bound to each colliery that year. Each was entitled to 95% of its average actual labour force for the preceding three years in order 'to supply the new collieries of the number then remaining' (WAT/1/5/31g). WAT 1/5/32 contains the colliery owners' agreement as to the maximum binding money to be paid at the binding in October 1805, differentiating payments on geographical location and marital status. The document also set out 'no poaching' agreements and provided that there should be no hiring of men who refused to be bound. In WAT 1/5/41a, there is a similar record for 1806. Here again there is evidence of the owners' association's efforts to establish maximum wage rates.

In the minute book of the Tyne and Wear owners' committee (NRO 263), there is a return for 1812 for each colliery of the wage rates paid for various categories of labourers. The owners were particularly concerned with binding arrangements, both the numbers of miners employed and the wage maxima. The minute book contains statements from mine agents who had apparently violated the rules established by the association.

The binding agreements at Stella in the 1840s raise many questions about the relationship between accounting and labour relations. By this relatively late date in the BIR, standard contractual clauses were now in printed form with much space provided for handwritten specifications as to a particular colliery's working. Included among these standard clauses in 1841 was a guarantee of sufficient work for hewers to earn 28s per fortnight over at least eight days, except for the month surrounding Christmas. However, the more substantive phraseology from the perspective of labour control was the provision that the individual hewer (NCB 1/SC 540):

'...shall, when required (except when prevented by sickness or other sufficient unavoidable

cause) do and perform a full day's work on each and every working day, or such quantity of work as shall be fairly deemed equal to a day's work, (not exceeding eight hours) and shall not leave their work until such day's work or quantity of work is fully performed or finished to the extent of each man's ability, and in default...pay...two shillings and sixpence'.

By the time of the 1843 annual binding, the owners had colluded to change the conditions of employment 'in consequence of the present depressed state of the Trade' (NCB 1/SC 558). Their circular stated that the guarantee of 28s per fortnight should be reduced to 26s and was to be averaged over the four preceding pays. The eight-day guarantee was left to the discretion of each individual colliery. The 'Standard price of Hewing' was reduced from 4s to 3/8d for eight hours. The wages of other workmen were similarly reduced.

Consistent with the owners' agreement, the 1843 Stella bonds were significantly changed. While the printed standard clause about the hewers' obligations (reproduced above) remained, in the section left blank for hand-written specifications the hewing piece rates were now set within a range of 4s to 5/6d per score, depending upon the miner's location in the mine. It is particularly interesting to note that the owners' association defined wages at day rates, while Stella's binding agreements specified piece rates adjusted for the geological and other conditions in each seam that would affect productivity. The standard printed clause guaranteeing sufficient work for hewers to earn a minimum amount had been crossed through. In its place was substituted a hand-written clause that allowed that hewers could be required to do shift labour (any work other than hewing) at the rate of 2/9d per nine-hour day. This stipulation reflected the degree to which the hewers were the aristocrats of mine labour. Not only was their normal pay much higher than other operative classifications, their normal hours were shorter.

Another standard printed clause crossed out in 1843 was the provision that in the event of a mine closing due to accident, hewers were entitled to 2/6d per day if alternative work could be found for them, 1/6d if not. Instead, it was stipulated in hand that (NCB 1/SC 545):

'...[T]he said Owners shall be empowered to lay off the said Collieries as usual at Christmas without any payment whatsoever being made; and in case the said Collieries should be prevented from working for more than Two Callendar Months by any cause whatever then this agreement to cease and determine'.

By 1863 (somewhat beyond our main period), bonds at Penshaw Colliery (NRO 3410/WAT/1/3) had changed in some further respects. The binding

date was April and there was no signing bonus. There appeared to be a greater attention to the collier's productive potential as a function of the quality of his location in the mine. A day's work was now specified as eight hours.

From the accounting perspective, what is striking in these labour arrangements is the failure of management to depart from what was traditional and customary in defining a 'fair day's work'. Language such as 'the extent of each man's ability' does not approximate the precision that cost accounting can bring to bear in disciplining labour. Even where piece rates introduced a greater specificity to wages as a labour-control technique, the Stella archive is silent as to how these rates were determined. Were they based on observations, negotiations, or whim? How were piece rates amended? At least in the case of B&W, the process for setting rates is known, even if the exercise was a one-off in that subsequent attention was never focussed upon revision (Fleischman et al., 1995). Here, by contrast, we have no direct clues and no evidence of attention to calculating the efficiency of labour as a means of control.

The level of accounting detail about overall profitability, about machines, and even about horses, is not in evidence for charting workers' activities or potentialities. For example, in the Johnson view book, as already noted, there are various reports on the productive potential for pits, suggesting output could be increased or had been higher in the past.³⁷ The conclusion about the Pensher Colliery in 1826 was 'present quantity 38 [scores] a day, but may be advanced to 45' (DF/WF/28.1: 507), and regarding Harraton, 'present quantity 27 [scores] a day, but 37 [scores] have been got and can be got again' (DF/WF/28.1: 508). The technical focus was clearly on how to get more out of machines and horses. There are detailed calculations of how much engines can draw, strokes per minute, etc. (e.g., DF/WF/28.1: 90, in a valuation report). While there is comment on the state of the seams and the quality of the coal, nothing seems to be said as to how these factors relate to productivity and/or working rates of miners. As an example, a viewer's opinion is given that a wage rate of '3/9d per score, with a 16 peck* corf' is 'sufficient' for hewing to get merchantable coals from the Hutton seam of Shieldrow Colliery in 1799 (DX 198/1: 101). But there is no justification given for this reckoning and, again, what is absent is any *calculation* of what constitutes a fair day's pay for a fair day's work.

In the mid-1830s, in the context of a dispute over the allocation of the vend, George Johnson, one of

³⁷ Clearly, owners had an incentive to claim the highest credible level in order to maximise their share of the allocation of the vend.

the leading viewers, clocked the time occupied in 'drawing, striking, and putting into the shaft each iron 60 peck tub' as one minute, 15 seconds. This speed would allow for seven scores per hour, 84 per day, according to Johnson's reckoning (DF/WF/28.3: 5). However, this precise timing exercise was again more focussed on the capability of an engine than of the miners. Immediately subsequent, the report goes on to say that the owners had now ordered 80-peck tubs, expected in a fortnight, which the machine 'will draw in the same time which will give [nine and one-third scores] per hour or 112 [scores] per day of 12 hours'. In an 1839 analysis of the Thornley Colliery, Johnson estimated that 'on an average of narrow and wide work' each of 360 active hewers (28 were reckoned to be off per day through sickness or 'other causes') could produce 10 corves of 20 pecks per day (DF/WF/28.3: 26–27). However, no details were provided to support this estimate of productivity.³⁸ Similarly, it was observed for Cragwood Colliery, 'a man will average in the Main Coal about 17 tubs of 22 pecks – the score 23 tubs' (DF/WF/28.3: 33). At least these estimates were made in the context of views of the particular conditions in individual mines. In 1813, another leading viewer, John Buddle, simply asserted that a hewer would produce 28 corves (1.4 score) per day on average (Flinn, 1984: 390).

During the 1830s, a standard list of 18 questions was devised for drawing up viewers' reports on individual mine operations in the context of the negotiations over the allocation of the vend. Extracting numerical data from just one of many such reports (DF/WF/28.3: 95–98), questions 14 and 15 asked for the number of engines (3) and machines (13) available for drawing coals. However, no information was provided for the size and condition of the labour force. Question 16, requesting the greatest quantity of coal that could be drawn daily from the workable pits by the present machinery, was answered by a calculation of the number of scores (of 20-peck corves) that each of the 13 machines could draw per day (60), giving a total of '780 scores per day by single shift'. Question 17 asked the same information relative to the current establishment of men, but did not include a detailed calculation, just totals for each pit's output and a grand total of 400 scores for the three pits. The final question asked for the greatest amount ever drawn in two successive fortnights and the pertinent dates. Question 18 seems more likely to have been answered with actual data, whereas the responses to 16 and 17 appear theoretical. In the given case, the answer was 11,736 scores (of 20-peck corves of 21 corves to the score) for the three pits over 22 working days. This total daily average (533) was more than the men were theoretically capable of doing, but less than

machine capacity.³⁹ This concentration upon maximum production levels appears again and again throughout Newcastle-area archives. However, its intent was clearly not to establish workers' responsibility for achieving certain levels of output, but rather to provide the basis for the division of the seasale coal market (the vend).

How were productivity and pay rates linked? One of the more incomprehensible features of the Tyneside archives is the fact that the binding agreements fixed specific piece rates for hewers' output while the owners' cartel established maximum rates for hewers' pay per day. Somewhere, in order to reconcile these different approaches, there must have been knowledge as to what a fair day's output would be given the condition of each pit or seam. As discussed in Section 2.2., this relationship was expressed in the notion of the 'stint'. But we have not been able to find any documented evidence as to how this customary productivity was actually measured or negotiated. None of the standard histories of British coal mining (e.g., Flinn, 1984; Mitchell, 1984; Church, 1986; Hatcher, 1993) have attempted to explain it at that level of practical, operational detail. The negotiation of rates would appear to have had more to do with the collective bargaining arrangements for the annual bindings than with the results of any attempt at a more scientific observation of productivity.

The perplexing inconsistency in an accounting methodology that tracked capital improvement costs so carefully while manifesting inattention to labour control may be examined from the viewpoint of both the historic-theoretical frameworks being considered here. From the economic-rationalist perspective, there may have been a greater cost/benefit in analysing and influencing the productive potential of machines, but not so the performance of labouring men. Machines such as steam engines could extend the depth to which pits could be dug and could substitute for horses in hauling coal to the surface. More efficient machines could substitute for less efficient machines. Moreover, from that perspective, the need for additional labour control might have been obviated by the annual binding procedures that defined the collier's obligation and restricted his mobility; by the tradition of training through long apprenticeship and the passing of the hewer's privileged

³⁸ See footnote 22 above for Johnson's remarks about the same colliery in 1842.

³⁹ A similar relationship is reported for later responses from various collieries in 1842 (DF/WF/28.3: 314, 359 ff.). The standard questions asked (p. 276) remain essentially unchanged. Although some of the answers might include figures for the number of men employed, there was still no detailed productivity calculation to justify the output capabilities asserted, while, presumably through an increasing laxness bred by familiarity, the engine capabilities were also no longer supported by as much detail.

function from father to son; by the piece-rate payment system; by the conditions of working at the coal face; and by the tacit knowledge of owners, labourers, and viewers as to what could normally be expected given the traditions of the industry. Nevertheless, substitutions could be made in methods of coal-face working and, increasingly from the 1840s, between the explosive power of gunpowder and the human power of hewing. Decisions must have been made here too, but there is no evidence that the relevant *calculations* were undertaken (or, at least, have survived) (cf. Mitchell, 1984: 76).

Meanwhile, the Foucauldian approach would be to enquire whether the discontinuity had yet occurred that would signal the genesis of modern management. A necessary breakthrough would be for managers to evaluate workers in the same way that they gauged the productivity of machines. In the absence of a conceptualisation that men's work could be measured as the work of machines, a commitment to *accounting* control of labour would be problematic. But, once management rationalises men as objects of efficiency like machines, an awareness of the measuring calculus can be communicated to them. Worker resistance may make this communication ineffective initially, but when, eventually, the work force internalises the discipline and becomes 'governable persons' (Miller and O'Leary, 1987), the resulting payoff can be that the workers' own well-being and that of the organisation are jointly advanced. It would appear that the conditions of possibility for this managerial advance to occur, the interweaving of new accounting practices and emerging managerial discourses, were not yet to be found in the Northeast coal fields, although accounting did serve a variety of other economic functions.

In summary then, it would appear that accounting was not used in the Northeast coal industry in the BIR for surveillance of the kind that characterises modern systems of control, not only of labour but of managers as well. Disciplinary systems of the kind that, through internalisation of performance norms, 'quietly order us about' (Foucault, cited in Megill, 1979: 493) were still absent.

4. Conclusion

The archival evidence from the coal mines of Northeast England around the turn of the 19th century demonstrates the utilisation of an array of cost and management accounting practices that still form part of the accountant's portfolio of techniques today. Accounting was a vital ingredient in stipulating contractual arrangements between mine lessees and owners, in organising and monitoring the division of the vend within the owners' cartel, and in informing the viewers' concerns with

expenditure control, with evaluation of technical efficiency improvements through increased mechanisation, and with major operational expansion/contraction decisions. Its variety of contractual and managerial roles reinforces the evidence from other significant BIR industries, such as B&W's Soho Foundry and the Dowlais mining/ironworks complex.

Differing contingent organisational demands for accounting developments in different countries and industries and at different times may be offered as economic rationalist explanations of the diversity of practices evident in the various archives of this period that have been examined and continue to be examined in the UK, the US, Europe, and elsewhere. Researchers such as Boyns and Edwards (1996), Boyns et al. (1997), and Tyson (1998) have argued that the prime focus of research into the management accounting history of this period should be on investigating this variety of ways in which modern accounting practices developed to meet the demands of a range of organisational objectives under varying conditions. These objectives included contractual (and other) relationships between firms and their suppliers of capital, their lessors, their competitors, their equipment suppliers, their customers, and, where relevant, state agencies. We have seen examples of several of these in relation to the Northeast mines. But accounting also contributed ever more extensively, in the increasingly capital intensive and multi-activity business enterprises that emerged from the Industrial Revolution, to the internal management co-ordination of such large-scale undertakings, to strategic decision making, and to operational planning and control (Fleischman and Parker, 1991).

Given the achievements we have documented in the accounting in BIR Northeast coal-mining, Neoclassical (economic rationalist) historians would not accept the 'Foucauldian' position that the absence of certain labour-control practices signals an environment discontinuous from modern practice. A wealth of evidence has been introduced here to illustrate the attention mine owners/lessees paid to cost control. As labour was a major expense item, this cost factor became a major focus. That the mine managers did not, however, deploy or develop accounting data to measure and control the productivity of their work forces may well have been rational economic behaviour within the context of the BIR. The anticipated disbenefits from labour resistance to a disciplinary regime may well have been perceived to outstrip the benefits of greater labour efficiency. Scarcity of skilled labour was perhaps a decisive factor, as Fleischman and Oldroyd (2001) have hypothesised for Nova Scotian coal mining. Moreover, at a fundamental level, Neoclassicists would question

the Foucauldians' privileging of labour control as *the* prerequisite to modern management (Boyns and Edwards, 1996, 1997a; cf. Hoskin and Macve, 2000).

From the Foucauldians' perspective, this contingent, demand-led approach offers only limited explanations of differing developments. For example, Johnson and Kaplan (1987) emphasised the importance of the demise of internal contracting in engendering close management attention to labour productivity and standard costs. While rational economic explanations of differing labour practices are often hard to identify (Marsden, 1986; cf. 1999), we have noted that a particular feature of the Northeast coal fields in the 19th century, unlike those in other parts of Britain, was that they did have direct employment, not internal subcontracting. Nevertheless, detailed accounting control of labour was still absent.

It has not been our purpose to deny the sophistication of the accounting practices developed in the Northeast coal mines in the BIR; indeed, they offer some of the earliest exemplars of the range of accounting practices to be found in BIR enterprises, as well as in early industrial enterprises in the US and elsewhere. But the extension of such modern accounting techniques does not in itself explain the fullness of modern accounting's power. In addressing 'the extent to which "successful" accounting methods transform the entities and practices of which they provide a calculative knowledge' (Miller and Napier, 1993: 632), it is argued that one of the key distinguishing features of modern accounting, that which gives it its particular power and status, is its objectification, classification, and surveillance of human performance.⁴⁰

This is why we see a crucial historical question as being how the discourse that could conceptualise and observe humans as equivalent to machines, and thereby engender the management revolution that characterises modern industrial organisation, was itself engendered. It has been argued elsewhere (Hoskin and Macve, 1994) that the conditions for this discursive leap and the relevant transformation of practices are to be found in the US in the early 19th century, concentrated in a group of engineers who had 'learned how to learn' in a new way at West Point from 1817 onwards. The history of how their influence spread through both manufacturing industries and the early railroads – the first large-scale, divisionalised US business organisations – has begun to be traced (Hoskin and Macve, 2000). The corresponding crux in the archival evidence for BIR firms is the identification of whether (and, if so, of where, when, and how) 'human control through accounting' was initiated in the UK too, control which could then develop from the initial direct control of productive labour through to generalised, inter-

nalised control of all organisational participants through the 'writing, examining, and grading' of the accounting eye.⁴¹

This paper has argued that the evidence from Northeast coal mining further reinforces the view so far obtained from the archives of other early BIR organisations. Despite a variety of conditions, no evidence of the crucial developments in human calculability has yet been found in the UK at a time when such developments have been argued to be observable in certain key organisations in the US.⁴²

As in the cases of B&W, Dowlais, and other BIR firms examined to date, this negative archival evidence on labour accounting practices does not of itself enable us to resolve the debate between the Neoclassical and Foucauldian perceptions of the processes by which modern accounting and modern management evolved. But an accumulation of such evidence will enable us to piece together more of the jigsaw of our theoretical understanding of how such developments occurred. Our own examination here of the Northeast mines in the BIR reinforces the need for further detailed historical research into accounting developments in the late 18th and early 19th centuries, elsewhere in the UK, in the US, and in other industrialising countries, to seek to identify where, when, and how the key transformations occurred and whether they are more adequately explained by the Neoclassical or Foucauldian perceptions of the processes by which modern management has evolved and developed.

As we have already noted, such research should

⁴⁰ 'Far from being neutral devices for mirroring the social world, the calculative technologies of accountancy are complex machines for representing and intervening in social and economic life. Along with allied expertises, the creation of calculating selves and calculable spaces enables a normalization of individual lives that is cast in financial terms. The visibility conferred on the calculating self who occupies a specific locale within a loosely assembled network of calculable spaces is intrinsically linked to norms of financial performance. Ways of organizing and ways of calculating have developed hand in hand' (Miller, 1992: 78–79).

⁴¹ For further discussion of how UK and US accounting and management practice developed in different ways in the 19th and early 20th century, and of the gradually increasing interchange between them, see Hoskin and Macve (2000).

⁴² Indeed, in the case of British mining companies, Boyns and Wale (1996: 75) found that, even after the turn of the 20th century and up to nationalisation in 1947, while mining company top managements were receiving greater volumes of disaggregated information on productivity, costs, and profits, nevertheless, 'there is virtually no evidence of moves towards the use of standard costing and budgeting, two of the most significant developments generally associated with the advent of scientific management during the early twentieth century' (in which Britain and Europe generally lagged behind the US – cf. Fleischman, 2000). By this late date, however, one also needs to take account of the role of labour unions in the negotiation of pay and conditions. As explained in footnote 1 we leave for a separate paper a critique of the 'labour-process' framework of historical analysis.

not, and could not, examine every extant archive. Indeed, that would be pointless, not least because of the loss of so many archives already. The further research needs to focus in particular – as we have done here and in the B&W case – on those ‘key sites’ that may be judged to have been significant in industrial and management development, and that have features that might be expected a priori to have favoured the relevant crucial advances in accounting and other managerial techniques (just as here it is the particular characteristics of the managerial and labour organization of the Northeast mines that make them of special historical interest). Many such sites are likely to have been examined before by other historians, albeit through different interpretative lenses. But ‘replication’ studies, even where they continue to provide only negative results, also provide a vital research contribution (e.g. Otley and Pollanen, 2000).

We therefore conclude by re-echoing the calls in Fleischman et al. (1995) and Boyns and Edwards (1996) for continuing investigation on both sides of the Atlantic, as well as in continental Europe and beyond (e.g., Boyns et al., 1997; Carmona et al., 1997; Bhimani, 1998), to trace the conditions of emergence of the key defining characteristics of modern accounting’s power. In this way we can

hope to sharpen, even if not resolve, the continuing current debates that, on the one hand, see the outputs of routine accounting systems emerging historically as valuable inputs to rational economic decision making⁴³ and, on the other hand, despite scepticism about these alleged economic rationales, nevertheless see the processes of the same routine accounting systems as enforcing a discipline that is an essential constituent of modern business organisation. Deciding which of these interpretations is historically more convincing may in turn be of value in illuminating aspects of the topical debate over what characteristics of present-day accounting, if any, will retain their power in the future organisational management, control, and governance of the redesigned, increasingly ‘virtual’, organisations that are emerging in the new era of internet-based, globalised business (e.g., Pasternak and Viscio, 1998; Otley and Fakiolas, 2000; cf. Jones, 2001).

⁴³ See Hoskin and Macve (2000) for further discussion of the theoretical implications of economic rationalism in relation to accounting numbers, in particular analysing the distinction between optimal information (Coase, 1938; Wells, 1978) and the advantages that may accrue from suboptimal information production under uncertainty (Casson, 1997; Feltham and Xie, 1994; Lamoreaux et al., 1997; Tyson, 1998).

Appendix A Glossary

binding:	annual contracting of individual miners to specific mines
chaldron:	a variable weight, 53 cwt. in Newcastle
charter-master:	a subcontractor who supplied the labour necessary to extract coal and raise it to the surface
corve:	a measure of capacity, varying between 16 and 20 pecks
cribbling:	a temporary wooden lining to a shaft, subsequently replaced by tubbing
drawing:	carrying coal from the mine face to the surface
hewer:	a miner who cuts coal from the face
leading:	carriage by horse-drawn cart or wain
pay:	fortnightly pay periods
pay bill:	fortnightly computations of all expenses related to coal extraction
peck:	unit of dry measure, ¼ bushel or eight quarts
pit bill:	fortnightly computations of individual miners’ output and pay
putter:	an underground hauler of coal by any form of transport
score:	twenty corves
staith:	a quay for transferring coal from a wagonway to a keel, generally with coal storage facilities
ten:	a variable measure of coal, typically 50 tons approximately
tubb:	shaft lining made with wood, bricks, stone, or cast iron
vend:	quantity of coal marketed either by individual collieries or by all
viewer:	a mine manager or consultant engineer
wagonway:	a railway for horse-drawn wagons using rectangular wooden (later iron) rails
winning:	to prepare a shaft for the extraction of coal

Source: These definitions are taken in part from Flinn (1984: 458–462).

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- NCB:** Durham Record Office, County Hall, Durham and Northumberland Record Office, Melton Park, North Gosforth, Newcastle upon Tyne
- NRO:** Northumberland Record Office, County Hall, Morpeth, Northumberland and Melton Park, North Gosforth, Newcastle upon Tyne
- TWAS:** Tyne & Wear Archives Service, Blandford House, Blandford Square, Newcastle upon Tyne
- WAT:** Northumberland Record Office, Melton Park, North Gosforth, Newcastle upon Tyne
- ZRI:** Northumberland Record Office, Melton Park, North Gosforth, Newcastle upon Tyne

Full details are available from the authors.

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UK brokers' characteristics: does size matter?

Simon Hussain*

Abstract—This study provides one of the first insights into how UK brokers' institutional characteristics may impact on the forecasting performance of their financial analysts. The study focuses on brokerage house size and finds it to be a significant factor explaining cross sectional variation in forecasting performance. This is consistent with evidence from several recent US studies (Jacob et al. 1997; Clement, 1999). It is likely that this broker-size effect reflects the resources (human, IT) available to brokers' analysts to support them in their activities. It may also reflect larger brokers' superior access to company managers and information. However, this broker-size effect appears to be significant only for forecasts made at horizons of one year or less. The sign of the earnings change being predicted also has a significant impact: for observations where earnings changes are negative, the broker-size effect is larger than for positive changes, though the effect is significant for both cases. In addition, the form of the model employed here suggests diminishing marginal returns to broker size. More generally, this study reiterates the importance of controlling for the most commonly cited explanatory variables for forecast accuracy, and there is evidence that the heavy industry sectors may be more difficult to forecast, echoing the conclusions of UK studies from the 1980s.

1. Introduction

1.1. A focus on brokerage houses

Brokerage houses play an important role within the investment community, influencing the allocation of capital resources. Through their financial analysts, they provide clients with buy/sell recommendations, original research on individual companies, and forecasts of future corporate earnings. Recent research, however, is demonstrating that brokers are not all the same. In particular, there is growing evidence from the US (Jacob et al. 1997; Clement, 1999) that brokerage house size is an important dimension, hitherto ignored in UK research. At present we know little about how characteristics differ among UK brokers, and whether these differences affect broker performance. It is the primary aim of this study to assess the impact of broker size, through a cross sectional investigation of their analysts' earnings forecasts.

Studies of UK analysts' forecasts have concentrated mostly on investigations of accuracy (e.g. Patz, 1989) and rationality (e.g., O'Hanlon and Whiddett, 1991; Capstaff et al. 1995; Hussain, 1996). However, such studies do not engage in comparative analyses of brokerage houses. Comparative investigations have been conducted in the US, but these tend to concern differences between individual analysts rather than brokers (e.g., O'Brien, 1990; Butler and Lang, 1991; Stickel, 1992; Sinha et al. 1997). Given the important role played by brokerage houses, it is of interest to know whether there are significant differences between the major UK brokers. A recent article by Capstaff, Paudyal and Rees (1999) (CPR99 hereafter) provides a strong motivation for an emphasis on brokers:

'[We] believe it is the brokerage firm with which policy and reputation are more generally associated. Research on the information and methods used by analysts has tended to focus on the policies and procedures within brokerage firms... Publications such as the *Investors Chronicle* in the UK also tend to be broker orientated with regular features such as 'Brokers Buy' and 'Brokers sell', and these are typically linked with earnings.' (CPR99: 4)

This emphasis on brokerage houses is also reflected in academic surveys of analysts' practices (Arnold and Moizer, 1984; Pike et al. 1993; Barker, 2000), where analyst practices are examined within the framework of individual brokerage houses. Indeed, another recent UK study suggests that analysts' practices may be closely associated with their particular brokerage house. Barker (1998)

*The author is lecturer at the University of Newcastle-upon-Tyne. He gratefully acknowledges the contribution of I/B/E/S International Inc. for providing their Earnings Per Share data freely. These data have been provided as part of a broad academic program to encourage earnings expectation research. He would also like to thank the two anonymous reviewers and Professor Ken Peasnell, all of whom have contributed significantly to developing the scope and focus of this paper. Particularly significant were their contributions to sections on model development and variable measurement. The timeliness and lucidity of their insightful reviews is greatly appreciated by the author. Correspondence should be addressed to Dr Hussain at the Department of Accounting and Finance, Armstrong Building, University of Newcastle-upon-Tyne NE1 7RU. Tel: 0191-222 8831; Fax: 0191-222-8758; e-mail: Simon.Hussain@ncl.ac.uk

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observed the workings of a UK brokerage house, employing 40 analysts, and reports that they 'followed similar working practices, particularly with respect to both new information that they received from companies and with information that they disseminated to fund managers'. (p.9) Thus, it would appear that this institutional dimension is an important element in understanding analysts' activities.

The CPR99 study examines earnings forecasts generated by the Top20 UK brokers, as ranked by the total number of forecasts, across the years 1987–95. After controlling for market value of equity, forecast horizon, industry sector and year-effects, they find evidence of significant differences in forecast accuracy within their sample of brokers. The relative accuracy of UK brokers has also been investigated in earlier studies, although these often lacked appropriate controls for explanatory variables. Bhaskar and Morris (1984: 121) examine a sample of profit forecasts from the mid-1970s and report significant differences in accuracy across a sample of 15 UK brokers. Taylor and Ward (1985) examine pre-tax profit forecasts generated by 22 UK brokers during the early 1980s, reported in the *Earnings Guide*. They find wide differences in forecasting performance across the 22 brokers.

While providing evidence that UK brokers differ in terms of forecasting ability, these studies shed relatively little light on *why* these differences exist. In recent years, there has been a growing realisation that there is an institutional dimension to capital markets research, and this includes research into analysts' forecasts. This study will examine whether brokerage house size has a role to play. Indirect evidence of a broker size effect comes from an early UK study by Atrill and McLaney (1987) which, like Taylor and Ward, uses *Earnings Guide* forecasts but concentrates on the six major UK brokers only. The study finds no significant differences in relative forecasting ability among the brokers. An obvious explanation for this finding is that by restricting their sample to only the largest UK brokers, Atrill and McLaney were removing a major source of cross-sectional variation in forecast accuracy.

1.2. The importance of brokerage house size

US studies of analysts' earnings forecasts by Jacob et al. (1997) and Clement (1999) find that accuracy is positively associated with brokerage house size. Intuitively, one would expect the largest brokers to be the best resourced in terms of in-house expertise and facilities. Large brokers often have their own in-house economists and IT specialists, as well as assistants and administrative staff to support their analysts. Indeed, this point is noted by Clement (1999: 289) who quotes Andrew

Melnick, the director of global equity research at Merrill Lynch:

'Today the senior analyst needs strong associates [assistants] and part of their job is to make the star look like a star.' (*Institutional Investors Magazine*, 1996: 52)

This comment is of particular interest since it appears to have linkage with the observations on UK brokers, reported by Arnold and Moizer (1984). They note that some UK brokers adopt a heavily 'analytical' approach to forecasting earnings, making use of computer models:¹

'The [broker] firm at the 'analytical' end of the spectrum maintained its own computerised models of the UK and world economies. In order to estimate a company's future earnings ... the analyst attempted to decompose the company's consolidated results into as small a set of individual activities as possible ... [and] ... then produced a forecast of turnover and operating profit for the next twelve to eighteen months, using the analysis of the company's previous results and international, national and industrial economic forecasts from the firm's computerised models.' (Arnold and Moizer, 1984: 197)

Any analyst seeking to employ such a strategy would need the support of a number of resources, including data-, IT-, and human-resources. The importance of understanding the impact of both macroeconomic and industry-level variables on a company's prospects is reiterated in a more recent UK study by Weetman and Beattie (1999: 32–33). Large, well-resourced brokers are most likely to be able to provide their analysts with the appropriate support teams for such forecasting requirements.

A second potential source of a broker-size effect may be differential access to company executives. It is well known that analysts value such contacts highly:

'[Company finance directors], analysts and fund managers were also in agreement that the company itself was centrally important as a source of information. For analysts, direct contact with the company provides timely, focused, forward-looking information that is perceived to offer a competitive advantage over rival analysts.' (Barker, 1998: 16)

Indeed, the issue of analyst access to company decision makers has been investigated in two ICAS studies by Marston (1996, 1999), conducted among analysts and major UK companies during

¹ Although Arnold and Moizer (1984) pre-dates Big Bang, a follow up study by Pike et al. (1993: 498) concludes that market changes (e.g. new technology) has had 'little impact on how UK analysts appraise ordinary shares'.

the 1990s.

The earlier study surveys finance directors for the 547 largest quoted UK companies, at August 1991, and reaffirms the perceived importance of the company-analyst relationship, to both company and analyst. The latter study interviews finance directors/investor relations officers of FTSE-100 companies, analysts/investment managers of institutional investors, and six stockbrokers' analysts, during the period June 1996 to May 1997. Marston (1999: 49) notes that companies claim to treat all institutions/analysts in a similar manner with regard to access to meetings and information, but that:

'[The companies] ... usually had a view about the relative importance of the different institutions and analysts. They tended to view large institutions and those institutions which held a large investment in their company as more important.' Marston (1999: 49)

They also appear to have an informal ranking for analysts, based on performance ranks, the potential to generate trade, and how closely the analyst follows the company. Intuitively, one would expect the most important analysts to be employed in the larger institutions. Marston's findings provide evidence of a potential link between broker size and analysts' access to information. When surveying the views of the analysts and investment managers, there certainly appears a belief that analysts' institutions are not all treated equally by companies:

'[The analysts/investment managers] considered that because they were working for large organisations they were in a lucky position and their perception was that smaller institutions might not be able to arrange one-to-one meetings so easily.' (Marston, 1999: 32)

If there is, or is perceived to be, a benefit to analysts working for larger institutions then a potential implication of such a phenomenon is that market participants may react more to forecast revisions and buy/sell recommendations from the larger UK brokers. Indeed, evidence from US capital markets (Stickel, 1995) suggests that investors do react more to buy and sell recommendations from larger brokers.

The study here does not examine this issue but restricts its attention to broker performance as revealed through the accuracy of annual corporate earnings-per-share forecasts. This study will employ OLS regression analysis to examine the impact of a set of explanatory variables on forecast accuracy, using a cross section of UK data. The details of the data set and the regression-based analysis are given in the following sections.

2. The data and methodology

2.1. Sample selection and data

Since this study is concerned with investigating the impact of explanatory variables on analysts' forecasts, it is important that the forecasts used are for the most heavily monitored UK stocks. It is well documented that the prices of large, well followed stocks impound information more quickly than prices for small firms (see Freeman, 1987). The same phenomenon is also found in UK analysts' earnings forecasts, resulting in greater accuracy at longer horizons for large firms (e.g. Patz, 1989; Capstaff et al. 1995; Hussain, 1998). Forecasts for small firms can often become stale due to a lack of monitoring activity by analysts, or because of a lack of competition for new information: analyst following for UK firms is a positive function of firm size (Marston, 1997; Hussain, 2000). Any study concerned with investigating the impact of analysts' incentives, cost structures, resources or other factors needs to employ data which reflect the impact of such factors clearly, and in an efficient manner. A concentration on large, well followed firms is also consistent with recent findings on how UK analysts behave in the wake of an earnings announcement:

'[T]he analysts restricted their attentions to large UK companies only, making it likely that the market might be transitorily semi-strong form inefficient with respect to small companies. One analyst alone in the [brokerage] firm was responsible for the universe of "small companies".' (Barker, 2000: 100)

For these reasons, this study concentrates on forecasts for FTSE-100 companies only. A cross-sectional approach is employed, examining forecasts for these UK companies for the year ends 1995, 1996 and 1997. No restriction is placed on the year-end month, so the earliest fiscal years begin in January 1994, and the latest end at December 1997. Thus, the results for the study should not be unduly affected by any unusual economic events, which may be peculiar to a specific 12-month period. The earnings-per-share (EPS) data are extracted from the I/B/E/S database for UK analysts at February 1999,² which consists of a number of different data files. The main data files employed here are the *Actuals* file which provides actual EPS values for firms, and the *Detail* file which contains all analysts' EPS forecasts submitted to I/B/E/S, together with analyst, brokerage house and company ID codes, and creation dates for all forecasts. All historic EPS values and forecasts are fully adjusted for subsequent stock splits

² For this particular edition of the I/B/E/S database, the fiscal years ending 1995–7 provides the three largest samples of observations for a cross-sectional investigation.

and capital changes. Both current year (FY1) forecasts, made after the announcement of the previous year's earnings, and forecasts made prior to this period, but within a two-year horizon (FY2) are included here.

In their study, CPR99 focus on the forecasts of the Top20 UK brokers, as ranked by the number of forecasts they generate. The study here ranks brokers in the same manner, and concentrates on forecasts for the Top40 UK brokers, representing over 90% of all forecasts on the UK I/B/E/S database. The domination of the market by the largest brokers mirrors *Extel* findings reported by Barker (2000: 98). The ranking procedure is repeated separately for 1995, 1996 and 1997 to allow for any year-to-year variation in broker rankings. For each year, the number of identified analysts is recorded for each brokerage house, and this will be used as the measure of broker size.³ By using forecasts from the Top40 brokers, as opposed to the Top20 investigated by CPR99, a greater degree of variation in broker size is obtained. This is a desirable factor for any study investigating the impact of broker size. No restriction is placed on the sign or magnitude of EPS forecasts or realisations. The selection procedure leads to a sample of 31,477 observations: 9,243 for 1995 year ends; 10,214 for 1996 year ends; 12,020 for 1997 year ends (I/B/E/S broker and company codes are available on request).

2.2. A parsimonious approach to modelling analysts' forecast errors

If we wish to investigate how brokerage house characteristics impact on the accuracy of their analysts' forecasts, it is important to first control for those (non-brokerage house) explanatory factors recognised as being associated with the magnitude of analysts' forecast errors. A problem facing any study of analysts' forecasts is the lack of a well developed theoretical model for explaining variation in the forecast error. What we face instead is a vast array of studies employing an ad-hoc collection of explanatory variables, with varying degrees of justification. Foster (1986: 287) summarises the findings of research into error determinants. Eight determinants are listed: forecast horizon; industry sector; firm size; number of lines-of-business; earnings variability; calendar year being forecast; occurrence of accounting method changes; source of the forecast (e.g. analysts, managers, time series models). Foster states (p.287) that the most consistent finding is the association between forecast error and forecast horizon, and also notes that a number of these variables may be proxying for the

same underlying factor. For example, large firms tend to display lower variability in the earnings series, and are more likely to have multiple lines-of-business.

Baldwin (1984: 380), while making reference to an early US article by Albrecht et al. (1977), also provides a list of eight explanatory variables for analysts' forecast errors: forecast horizon; industry sector; firm size; corporation age; earnings variability; calendar year being forecast; detail (finess) of financial information; source of the forecast. The Baldwin (1984) and Foster (1986) lists provide six common variables: forecast horizon; industry sector; firm size; calendar year being forecast; source of the forecast, and earnings variability. The first four variables form the basis of the recent CPR99 model, and the fifth is implicitly controlled since the forecasts in their study are all generated by analysts, as opposed to alternative sources like management or statistical models. The sixth variable, earnings variability is not included in CPR99.

The list of potential explanatory variables has been extended in other studies to include: disclosure practices, especially with regard to segmental data (e.g. Baldwin, 1984; Emmanuel et al. 1989; Hussain, 1997); the age of the corporation (Baldwin: 380), and systematic risk β (e.g. Patz, 1989). More recently, the set of explanatory variables has been extended further to take account of individual analysts' characteristics (e.g. Mikhail et al. 1997, 1999; Clement, 1999). Again, there is the likelihood that different characteristics will proxy for the same underlying factors.

Faced with such a large set of potential variables, and with a lack of any significant theory to provide guidance, the decision is taken here to adopt a parsimonious approach to variable selection. The only recent large-scale UK study to examine the relative performance of UK brokers is CPR99. Prior to this, UK studies of relative broker performance had used smaller data sets, and no controls for factors that can affect forecast accuracy. CPR99 control for five of the six factors common to both the Baldwin (1984) and Foster (1986) lists of explanatory variables. Only earnings variability is omitted from their model. Since CPR99 is the only major UK study to examine the relative accuracy of UK brokers, their model represents a natural starting point for any study investigating the potential additional explanatory power of broker characteristics, with regard to forecast accuracy.⁴

It should be noted at this point that CPR99 use a fixed-effects approach to analyse the forecast error, in which the explanatory variables are represented by a matrix of dummies (see CPR99: 6–7). The residual error term for each observation is then treated as being a *standardised* forecast error, net of industry, horizon, market value and year-

³ For this broker-ranking procedure, forecasts relating to unidentified (uncoded) analysts are eliminated.

⁴ The impact of the 'omitted' variable, earnings variability, will be examined separately.

effects. Thus, the model is simply a means of stripping out the effects of these unwanted sources of error variation. No regression model estimates are presented in their study, only details of the *standardised* errors. In contrast, the study here examines cross sectional variation in the forecast error through traditional regression modelling, investigating whether broker size has a significant association with forecast errors, in a model, which already controls for the CPR99 variables.

The absolute proportionate error will be employed, as used in previous UK studies like Patz (1989), O'Hanlon and Whiddett (1991), Capstaff et al. (1995) and Hussain (1998). However, this metric will be natural-log transformed here to reduce skewness, generating the log-transformed absolute proportionate error (LAPE) defined by equation 1:

$$LAPE_{i,j} = \ln \left[1 + \frac{|F_{i,j} - A_{i,t}|}{|A_{i,t}|} \right] \quad (1)$$

where, $A_{i,t}$ is the annual EPS value of firm i for year t , and $F_{i,j}$ is the forecast of $A_{i,t}$ by broker j .

Some studies have opted for a price deflated error metric. The rationale often given for this choice is that prices are less likely than EPS to be near zero. However, on its own this is not a strong argument. It would be undesirable for a study concerned solely with the measurement of accuracy to allow error metrics to vary with a non-earnings measure like share price. This could lead to companies with identical values for forecast and realised earnings numbers, reporting different measures of accuracy. Support for the use of actual earnings as a deflator for the forecast error can be found in Basi et al. (1976: 247), Patz (1989: 269, footnote 4), and Hussain (1997: 147). For consistency with the majority of prior UK studies, actual earnings are used here as the error deflator.

The descriptive statistics for the absolute proportionate error (APE) and its log-transformed equivalent (LAPE) which will be used in the regression model, are given in Table 1. Details are also provided for a truncated version of LAPE, truncated where the absolute forecast error exceeds the error deflator (i.e. exceeds 100%). This is used to examine the model's sensitivity to the presence of extreme forecasts (see Section 3.1).

Variation in LAPE will be explained within the framework of an OLS regression model. The explanatory variables and their measurement are described next.

2.3. The explanatory variables

The starting point for the model development is the recent CPR99 study of UK brokers. Their analysis controls for four major factors: forecast horizon, market value of equity, industry sector

and year-effects. As mentioned above, these factors have long been recognised as explanatory variables for forecast accuracy.

Any study of forecast accuracy must consider the forecast horizon. As one would expect, as the target announcement date nears, the information set (firm-specific and economic data releases) grows, allowing improved predictive ability. A careful study of this phenomenon is provided by Brown et al. (1985) but most studies of accuracy make reference to the importance of the horizon. UK studies provide strong evidence that forecasts generated at shorter horizons are more accurate than those generated at longer horizons (e.g. Bhaskar and Morris, 1984; Patz, 1989; Capstaff et al. 1995). Forecast horizon (HORZ) is measured here as the number of days from the creation date for a forecast, reported in the I/B/E/S database, to the date of the target announcement. This study imposes a two-year (730-day) upper limit on the forecast horizon, and the resulting sample mean of 364 days reflects an almost equal number of short-term forecasts (FY1) and long-term forecasts (FY2) forecasts.

H0: There is no association between HORZ and forecast error (LAPE)

H1: There is a positive association between HORZ and forecast error (LAPE)

Market value (MV) is the most commonly used measure of firm size. For the sample of forecasts studied here, MV ranges from £2,550m to £53,567m with a mean of £10,903m. This information is extracted from the London Business School's *Risk Measurement Service* (1997). Market value of equity has long been recognised as a major explanatory variable for information-sensitive values like earnings forecasts and stock prices. Information is reflected in such values much more quickly for large firms than for small firms: there are greater financial incentives for monitoring firms with large market values (Freeman, 1987: 196; Bhushan, 1989: 261; Hussain, 1998: 275–77). Large firms are also associated with superior information sets (e.g. Thompson et al. 1987) and greater analyst following (e.g. Bhushan, 1989; Marston, 1997). The increased information collection and dissemination, and the greater analyst-competition for larger firms, results in reduced forecast errors (e.g. Patz, 1989) and greater superiority over model-based forecasts (e.g. Hussain, 1998).

H0: There is no association between MV and forecast error (LAPE)

H1: There is a negative association between MV and forecast error (LAPE)

The London Business School's *Risk Measurement*

Table 1
Descriptive statistics for FTSE-100 observations (1995–1997)

Variable	Observations	Min	Max	Mean	Std Dev	Median
APE [†]	31,477	0	7.875	0.1207	0.2162	0.065
LAPE	31,477	0	2.1832	0.1032	0.1317	0.063
LAPE (truncated)	31,477	0	0.69315	0.1009	0.1157	0.063
F	31,477	-25.00	134.00	35.88	20.71	32.00
A _t	31,477	-21.00	113.20	35.87	20.80	31.40
A _{t-1}	31,477	-21.00	104.20	33.29	19.81	19.80
IND1	31,477	0	1	0.08	0.26	0
IND2	31,477	0	1	0.18	0.39	0
IND3	31,477	0	1	0.14	0.35	0
IND4	31,477	0	1	0.28	0.45	0
IND5	31,477	0	1	0.12	0.33	0
IND6	31,477	0	1	0.20	0.40	0
MV	31,477	2550	53,567	10,903	11,903	6262
HORZ	31,477	0	730	364.4	203.3	356
D1995	31,477	0	1	0.29	0.46	0
D1996	31,477	0	1	0.32	0.47	0
D1997	31,477	0	1	0.38	0.49	0
SIGN	31,477	0	1	0.2474	0.43	0
SIZE	31,477	1	110	51.55	29.47	47
ABEARN ^{††}	31,477	0	5.63	0.2013	0.4052	0.1250
EARN	31,477	0	1.89	0.1599	0.1816	0.1178

Where LAPE = forecast error defined below; F = forecast of target EPS value; A_t = target EPS realised value for fiscal year *t*; A_{t-1} = realised EPS for previous fiscal year (*t-1*); IND1 = industry dummy for mineral extraction; IND2 = industry dummy for general industrials; IND3 = industry dummy for consumer goods; IND4 = industry dummy for services; IND5 = industry dummy for utilities; IND6 = industry dummy for financials; MV = market value of equity; HORZ = forecast horizon (days); D1995 = dummy indicating 1995 year end; D1996 = dummy indicating 1996 year end; D1997 = dummy indicating 1997 year end; SIGN = dummy variable for firms with falling earnings during the fiscal year being forecast; SIZE = broker size as measured by the number of analysts employed; EARN = measure of the magnitude of the change in annual earnings during the fiscal year being forecast, defined below.

[†]APE = absolute proportionate forecast error, transformed into LAPE for regression analysis:

LAPE = $\ln(1 + \text{APE})$ where $\text{APE} = |F - A_t| \div |A_t|$

LAPE (truncated) = LAPE, truncated where APE values exceed 1 (i.e. 100% forecast error), giving a maximum value of $\ln(1 + 1) = 0.69315$.

^{††}ABEARN = absolute proportionate change in earnings during the fiscal year being forecast, transformed into EARN for regression analysis:

EARN = $\ln(1 + \text{ABEARN})$ where $\text{ABEARN} = |A_t - A_{t-1}| \div |A_{t-1}|$

Service is used to assign firms to the major FTSE industry sectors, each represented by an industry dummy variable: mineral extraction IND1 (2,377 observations), general industrials IND2 (5,757 observations), consumer goods IND3 (4,483 observations), services IND4 (8860 observations), utilities IND5 (3,801 observations), and financials IND6⁵ (6,199 observations). There is a logic to this procedure if it is believed that some sectors are more easily forecast than others. A casual inspection of mean errors by industry sector provides some evidence that an industry-sector effect exists within this sample. The mean LAPE values are as

follows: IND1 (0.1895); IND2 (0.1263); IND3 (0.0640); IND4 (0.0850); IND5 (0.0890); IND6 (0.1126). These results provide some support for the use of industry sector dummies, though it must be remembered that these error values do not control for the other explanatory factors.

Prior US and UK studies have generated mixed results on the importance of industry membership. An early US study by Cragg and Malkiel (1968) finds no significant role for industry membership in the determination of forecast accuracy, but Richards (1976) and Richards et al. (1977) suggest that industry membership is an important factor. Two of the major UK studies into analysts' forecasts – Bhaskar and Morris (1984) and Patz (1989) – find somewhat mixed evidence for the impor-

⁵ No dummy is used for 'financials' in the regression analysis. Its effect is captured in the intercept.

tance of individual industry sectors. However, there is a common finding: heavy industry sectors appear to be more difficult to predict than the services and consumer goods sectors:

'[T]wo broad industry categories were established: on the one hand, mineral extraction, the manufacture of industrial goods, and construction; and on the other, the manufacture of consumer goods, and the services sector.....Thus, whereas over two-thirds of the relative forecast errors were in the $\pm 10\%$ range for the 'services' sector, only 37.7% of those in 'heavy manufacturing' were within that range.' (Bhaskar and Morris, 1984: 119)

'In general, the findings overall were similar to B&M [Bhaskar and Morris] includinggreater prediction difficulty for the heavy industrial sector over the consumer goods and services sector.' (Patz, 1989: 273)

However, the results of a regression model analysis by Bhaskar and Morris (1984: 122) indicate that this industry-effect is not statistically significant. Examination of the industry-effect is further complicated by researchers using different industry classification systems, and the fact that large multi-product firms may not be easily classified under a single industry sector. A priori, it is not possible to identify the direction of the association between each industry dummy IND_m (where $m = 1, \dots, 5$) and forecast error, although the possible 'heavy industries' effect suggested in prior UK studies will be referred to later:

H0: There is no association between IND_m and forecast error (LAPE)

H1: There is an association between IND_m and forecast error (LAPE)

Calendar year-effects are controlled through employment of year dummies for 1995 (D1995) and 1996 (D1996), with 1997 effects absorbed into the intercept term. The general level of forecast errors could vary across years if some years were more heavily affected by unanticipated economic changes, for example (Capstaff et al. 1995: 78). A simple inspection of mean LAPE values does not provide any evidence of notable trends across the three years: 1995 (0.1041); 1996 (0.0980); 1997 (0.1068). Again, however, this kind of casual inspection does not take account of error variation due to other explanatory factors.

H0: There is no association between D1995/6 and forecast error (LAPE)

H1: There is an association between D1995/6 and forecast error (LAPE)

In addition to the variables above, this study adds a new explanatory variable: broker size, as

measured by the number of *identified* analysts on the I/B/E/S data base, corresponding to a particular broker code. The rationale for including broker size as an explanatory variable is presented in Section 1.2 above, but the appropriateness of this measure needs explanation. Alternative measures of broker size could include the number of forecasts generated by the brokerage house, or the number of firms followed. Why should the number of analysts employed be a superior measure? First, the measure employed here is consistent with prior US studies, which have investigated the impact of broker size. However, it should be noted that while the US study by Clement (1999) uses the number of analysts to rank brokers by size, the broker size effect is investigated using a dummy for the Top10 brokers only, rather than a continuous broker-size variable. This could lead to unexploited variation in the model. Because of this, the study here uses the actual number of analysts as the broker size measure, which should provide a stronger examination of the link between broker size and forecast accuracy than use of a simple 'Top10 brokers' dummy.

Second, and perhaps more importantly, it must be remembered that a rationale for the existence of a broker-size effect is the difference in brokerage house resources. While firm coverage and the number of forecasts may be associated with broker size, they are *outputs* rather than resources. The number of analysts represents a measure of the brokerage house's human resource. For this reason, brokerage house size (SIZE) will be measured here by the number of analysts, consistent with US studies. In this study, it is found that the number of *identified* analysts for Top40 brokers range from 1 to 110, with a mean of nearly 52 and a median of 47. Clement (1999) does not provide equivalent descriptive statistics for US broker size, but these figures are similar to the 40 analysts reported for the brokerage house observed by Barker (1998).

H0: There is no association between SIZE and forecast error (LAPE)

H1: There is a negative association between SIZE and forecast error (LAPE)

The variables listed above form the main set of explanatory variables for this study's parsimonious modelling of forecast errors. Apart from broker size (SIZE), which is the major concern of this research, all the variables are well known determinants of analysts' forecast errors.

2.4. The regression analysis

Variation in the forecast error metric (LAPE) is examined through application of OLS regression estimation, to the model defined by equation 2. This model controls for the CPR99 explanatory

variables, and broker size. The details of the analysis are presented in Section 3.

$$LAPE = a_0 + a_1.HORZ + a_2.MV + \sum_{m=1}^5 a_{2+m}.INDm + a_8.D1995 + a_9.D1996 + a_{10}.SIZE + \varepsilon \quad (2)$$

where LAPE = forecast error defined in equation 1; IND1 = industry dummy for mineral extraction; IND2 = industry dummy for general industrials; IND3 = industry dummy for consumer goods; IND4 = industry dummy for services; IND5 = industry dummy for utilities; MV = market value of equity; HORZ = forecast horizon (days); D1995 = dummy indicating 1995 year end; D1996 = dummy indicating 1996 year end; SIZE = broker size as measured by the number of analysts employed; a_i = OLS regression model parameters; ε = random error term following usual OLS assumptions.

The two primary problems affecting cross-section data modelling, heteroskedasticity and multicollinearity, are addressed in the following manner. Heteroskedasticity is dealt with through robust t-values, based on the White (1980) covariance estimator. Multicollinearity is investigated through presentation of variance inflation factors (VIF). These are generated for each variable in a model, and provide a measure of how much the estimated variance of the coefficient estimate has been inflated by the presence of multicollinearity. VIF scores greater than 5 indicate that multicollinearity is a matter for concern (see Studenmund, 1992: 275–76). The VIF procedure is superior to examining simple bivariate correlations in a conventional matrix because it takes account of each variable's correlation with all other explanatory variables together, rather than one at a time.

3. Regression model results

Section 3.1 presents the results of the regression analysis (equation 2) conducted for all EPS forecasts for FTSE-100 companies (1995–97) made by the Top40 brokers within a two-year period prior to an annual announcement. Section 3.2 reports the results of regression analyses applied to forecasts within each of the four semi-annual periods which make up the two-year forecast horizon. Section 3.3 re-examines the regression results, with the addition of two new variables which measure the change in earnings for the fiscal year being forecast: earnings variability is listed as an explanatory variable in both Baldwin (1984) and Foster (1986) but is omitted from previous UK studies of relative broker accuracy.

In the following sections, the results of statistical tests are described as significant where the relevant null-hypothesis can be rejected at a 0.05 level (i.e. 5%) or less.

3.1. The impact of broker size: all forecasts

This study employs regression model analysis for a sample of 31,477 observations, for FTSE-100 companies during the fiscal years ending 1995–97. The primary aim of the study is to identify whether broker size plays a significant explanatory role in the determination of accuracy for UK analysts' earnings forecasts. The forecasts are generated at horizons of two years or less. Table 2 (panel A) presents results for regression estimation of equation 2, both with the broker size variable excluded (model 1) and included (model 2). This allows examination of whether SIZE can explain significant cross-sectional variation in forecast errors, in a model that already controls for the CPR99 variables.

It can be seen from Table 2 (panel A) that the addition of the broker size variable does not add greatly to the overall explanatory power of the model which remains at 13.7%. The resulting increase in the adjusted R-squared is less than 0.1%. However, the coefficient for SIZE is highly significant, providing evidence of a broker-size effect in UK analysts' forecasts. The model was also re-run with a variety of non-linear transformations to MV and HORZ, but results remained near-identical. The slope estimates for both model 1 and model 2 are similar. The following discussion relates to model 2, since this includes the broker size variable.

The results in panel A show that, consistent with past studies of analysts' forecasts, errors are positively associated with the forecast horizon (HORZ). As the year progresses and the announcement date approaches, there are new information releases (e.g. interims) and information leaks, which become impounded into stock prices and analysts' earnings forecasts. The t-value for the slope (43.7) is significant at any reasonable probability level. Also consistent with prior studies, a negative association is found between the forecast error and the market value of equity (MV). Again, the t-value for the slope (–30.8) is significant at any reasonable probability level.

The inclusion of the industry dummies appears to have been useful, with evidence of significant differences between these sectors. The coefficient for the mineral extraction dummy (IND1) is positive and significant ($t = 34.6$) suggesting larger forecast errors for this sector. The coefficients for the general industrials (IND2), consumer goods (IND3), services (IND4) and utilities (IND5) dummies are all negative and significant, suggesting relatively superior forecast accuracy. The dummy variable for financials (IND6) is the omitted dummy variable and is absorbed into the intercept term. However, a casual inspection of the mean LAPE values for different industry sectors, described in Section 2.3 reveals that forecast accuracy

Table 2
Explaining variation in UK brokers' forecast errors for FTSE-100 companies (1995–1997)

The regression results are for variations on the model defined below:

$$LAPE = a_0 + a_1.HORZ + a_2.MV + \sum_{m=1}^5 a_{2+m}.INDm + a_3.D1995 + a_4.D1996 + a_{10}.SIZE + a_{11}.SIGN + a_{12}.EARN + \varepsilon$$

Model 1: Consists of the CPR99 variables only (IND1,...,IND5, D1995, D1996, MV, HORZ)

Model 2: Consists of variables in Model 1, plus SIZE.

Model 3: Consists of variables in Model 1, plus SIZE, SIGN and EARN, i.e. the full model.

Where LAPE = forecast error defined in Table 1; IND1 = industry dummy for mineral extraction; IND2 = industry dummy for general industrials; IND3 = industry dummy for consumer goods; IND4 = industry dummy for services; IND5 = industry dummy for utilities; MV = market value of equity; HORZ = forecast horizon (days); D1995 = dummy indicating 1995 year end; D1996 = dummy indicating 1996 year end; SIGN = dummy variable for firms with falling earnings during the fiscal year being forecast; SIZE = broker size as measured by the number of analysts employed; EARN = the absolute proportionate change in annual earnings, defined in Table 1; a_1 = OLS regression model parameters; ε = random error term following usual OLS assumptions.

Panel A: Examining the importance of broker size, across all forecasts

Variables:	Intercept	HORZ	MV	IND1	IND2	IND3	IND4	IND5	D1995	D1996	SIZE
Model 1											
n = 31,237	9.1E-02	1.5E-04	-2.1E-06	0.108	-5.6E-03	-4.2E-02	-4.4E-02	-3.2E-02	-4.1E-03	-7.9E-03	-
Adj-R ² : 13.7%	✓ (39.4)	✓ (43.5)	✓ (-30.6)	✓ (34.6)	✓ (-2.41)	✓ (-17.2)	✓ (-21.0)	✓ (-12.5)	✓ (-2.43)	✓ (-4.79)	-
F-stat: 554.8	[-]	[1.00]	[1.40]	[1.43]	[1.67]	[1.50]	[1.83]	[1.43]	[1.25]	[1.25]	-
Model 2											
n = 31,477	9.7E-02	1.5E-04	-2.1E-06	0.108	-5.5E-03	-4.2E-02	-4.4E-02	-3.2E-02	-5.9E-03	-8.6E-03	-1.0E-04
Adj-R ² : 13.7%	✓ (35.8)	✓ (43.7)	✓ (-30.8)	✓ (34.6)	✓ (-2.41)	✓ (-17.2)	✓ (-21.0)	✓ (-12.6)	✓ (-3.40)	✓ (-5.21)	✓ (-4.29)
F-stat: 501.4	[-]	[1.00]	[1.39]	[1.43]	[1.67]	[1.50]	[1.83]	[1.43]	[1.33]	[1.26]	[1.07]

Table 2
Explaining variation in UK brokers' forecast errors for FTSE-100 companies (1995–1997) (continued)

Panel B: Semi-annual period analysis of broker size

Estimation of Model 2 using semi-annual segmentation (SA1,...,SA4) of forecast horizon (HORZ):

- SA1 (0 months ≤ HORZ < 6 months)
- SA2 (6 months ≤ HORZ < 12 months)
- SA3 (12 months ≤ HORZ < 18 months)
- SA4 (18 months ≤ HORZ ≤ 24 months)

Variables:	Intercept	HORZ	MV	IND1	IND2	IND3	IND4	IND5	D1995	D1996	SIZE
Period: SA1 n = 7195 Adj-R ² : 9.5% F-stat: 76.8	0.107 ✓ (24.5) [-]	5.7E-05 ✓ (3.02) [1.01]	-1.7E-06 ✓ (-14.5) [1.40]	3.9E-02 ✓ (5.39) [1.49]	-4.7E-02 ✓ (-14.5) [1.59]	-4.1E-02 ✓ (-13.9) [1.48]	-4.9E-02 ✓ (-16.1) [1.78]	-1.5E-02 ✓ (-3.56) [1.43]	5.3E-03 ✓ (2.11) [1.34]	2.7E-03 (1.18) [1.30]	-1.0E-04 ✓ (-3.37) [1.04]
Period: SA2 n = 9530 Adj-R ² : 9.6% F-stat: 101.8	9.1E-02 ✓ (14.8) [-]	1.5E-04 ✓ (8.05) [1.00]	-1.8E-06 ✓ (-13.6) [1.38]	9.3E-02 ✓ (10.1) [1.35]	-1.1E-02 ✓ (-2.69) [1.66]	-4.0E-02 ✓ (-14.0) [1.47]	-3.9E-02 ✓ (-13.3) [1.81]	-3.0E-02 ✓ (-8.27) [1.40]	1.2E-03 (0.42) [1.32]	-3.0E-03 (-1.17) [1.22]	-1.9E-04 ✓ (-5.10) [1.08]
Period: SA3 n = 7255 Adj-R ² : 10.5% F-stat: 86.1	0.122 ✓ (8.82) [-]	1.1E-04 ✓ (4.04) [1.01]	-2.2E-06 ✓ (-10.6) [1.42]	0.116 ✓ (9.01) [1.50]	3.7E-04 (0.07) [1.71]	-4.8E-02 ✓ (-13.5) [1.56]	-4.5E-02 ✓ (-11.7) [1.88]	-3.9E-02 ✓ (-9.03) [1.48]	-1.8E-02 ✓ (-4.67) [1.35]	-1.4E-02 ✓ (-3.85) [1.27]	-4.5E-05 (-0.83) [1.09]
Period: SA4 n = 7497 Adj-R ² : 12.8% F-stat: 111.5	0.184 ✓ (8.76) [-]	1.0E-05 ✓ (0.32) [1.00]	-2.8E-06 ✓ (-10.9) [1.40]	0.186 ✓ (10.9) [1.40]	3.4E-02 ✓ (4.83) [1.73]	-3.9E-02 ✓ (-9.90) [1.54]	-4.1E-02 ✓ (-9.91) [1.88]	-4.3E-02 ✓ (-8.89) [1.46]	-1.5E-02 ✓ (-2.96) [1.37]	-2.0E-02 ✓ (-4.60) [1.31]	-5.8E-05 (-0.89) [1.07]

Table 2
Explaining variation in UK brokers' forecast errors for FTSE-100 companies (1995-1997) (continued)

Panel C: Examining the impact of variations in annual earnings for the fiscal year being forecast

Variables:	Intercept	HORZ	MV	IND1	IND2	IND3	IND4	IND5	D1995	D1996	SIZE	SIGN	EARN
Model 3	6.5E-02	1.6E-04	-1.2E-06	7.0E-02	-8.6E-03	-2.0E-02	-1.3E-02	-1.1E-02	-1.2E-02	-1.0E-02	-7.0E-05	9.3E-02	0.278
n = 31,237	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Adj-R ² : 32.0%	(2.48)	(51.8)	(-19.9)	(25.0)	(-4.19)	(-9.14)	(-7.11)	(-4.69)	(-7.42)	(-6.83)	(-3.28)	(63.3)	(75.1)
F-stat: 1232.9	[-]	[1.01]	[1.43]	[1.48]	[1.69]	[1.54]	[1.89]	[1.45]	[1.38]	[1.28]	[1.07]	[1.08]	[1.20]

In the cells below each variable are the following data:

- OLS regression coefficient
 - (Heteroskedasticity-robust t-value)
 - [VIF multicollinearity measure]
- ✓ indicates rejection of the null-hypothesis that the slope coefficient is zero, at the 0.05 level using a two tail test (IND1,...,IND5, D1995, D1996) or a one tail test (MV, HORZ, SIZE, SIGN, EARN) as appropriate. In fact, for the results of this study, all slopes found to be significant for a one tail test have t-values that are also significant for a two tail test, so the conclusions of this study are not dependent on the choice of applying one tail or two tail tests to parameters.
- F-stat: Test of null hypothesis that all slopes = 0
- Critical VIF value: >5

for financials (IND6) is in the mid-range: IND1 and IND2 have larger mean errors, while the three remaining sectors have smaller mean errors.

Relative forecasting performance for different industry sectors is not a primary concern of this study, but the findings provide some interesting insights. The larger errors for mineral extraction, and the smaller errors for both consumer goods and services, are consistent with findings in prior UK studies of analysts' forecasts by Bhaskar and Morris (1984) and Patz (1989). Also, the significant negative coefficient for the utilities dummy (IND5) is of some interest because it has been argued that the bodies which regulate utilities and can regulate pricing policy, may be a useful source of information to the investment community (Moyer et al. 1989: 506). This hypothesis would be consistent with reduced forecast errors. The findings for general industrials IND2 appear to be sensitive to the forecast horizon (see Section 3.2). It may also be noted that the coefficients for the year dummies (D1995, D1996) provide evidence of calendar-year differentials in accuracy.

The primary aim of this study is to investigate the impact of brokerage house size on forecast accuracy. Broker size is measured here by the number of analysts employed, as recorded in the I/B/E/S database for UK forecasts. Unlike the US study by Clement (1999) which controls for broker size merely through the use of a dummy for Top10 brokers, the SIZE variable used here is a continuous metric, able to fully represent variations in broker size. The results in panel A provide evidence of a significant broker-size effect existing in the EPS forecasts of UK analysts. The slope for SIZE is negative ($-1.0E-04$), indicating improved accuracy for analysts in larger institutions and the t-value (-4.29) is significant at any reasonable probability level. Non-linear transformations of the SIZE variable also produce negative slopes and similar R-squared and t-values. It is likely that some of the cross-sectional variation in broker performance documented by prior UK studies is due to this size effect since broker size is not controlled. These results also help explain the findings of the UK study by Atrill and McLaney (1987) which focused on the six major UK brokers and found little variation in relative performance. Their concentration on only the very largest brokers probably removed an important source of cross-broker error variation.

Past studies of analysts' forecasts have sometimes removed or truncated forecast errors so as to limit the influence of any extreme values. CPR99 (p.8) use a 100% error limit, applying to observations where the absolute error is greater than the denominator of the error metric. For this study, the absolute proportionate error was log-transformed (see equation 1) to reduce the impact of extreme

errors. However, to further examine this issue, a 100% error truncation is applied to all observations where the absolute value of the forecast error exceeds the magnitude of the deflator (A_t). This means the absolute proportionate error (APE) having an upper bound of unity, so the log-transformed metric used in the regression (LAPE, equation 1) has an upper bound of $\ln[1+1]$. Only 240 observations out of the 31,477 are affected by this procedure. The untabulated results of the regression analysis are near-identical to those for the original analysis (see Table 2, panel A). The conclusions of this study are not, therefore, the product of a few extreme forecast errors.

Before moving on to the next section, it may be useful to examine the adjusted R-squared measures. The value of 13.7% may appear somewhat disappointing. However, it is not untypical for UK studies. Bhaskar and Morris (1984: 122, equation 3) use a similar error metric to the LAPE, but without a log-transformation. They employ four explanatory variables: forecast horizon, firm size, systematic risk (β), and an industry dummy for 'heavy manufacturing'. Some of their measures are problematic: for example, firm size is measured by level of profits rather than market value, and generates an unexpected *positive* slope. The R-squared value for their regression is 16.0%. A similar set of variables (with the addition of analyst following) is used in a multivariate analysis of forecast errors, reported in Patz (1989: Table 4). The error metric, denoted E_a^2 by Patz, is the same as the LAPE used here, but without the log-transformation. The model generates an R-squared of only 6.0%. Of course, it is also possible that much of the variation in analysts' errors may be random and, thus, beyond explanation.

3.2. The broker-size effect: analysis by semi-annual period

It is possible that the impact of broker size may vary with the forecast horizon. If broker size is associated with superior access to company managers and information, or superior ability to analyse such information, it is possible that the predictive gains relative to smaller brokers, may be more noticeable at certain specific horizons. For example, it may be that greater economic and industry-level knowledge, available from support teams, allows analysts in larger brokers to predict forthcoming changes earlier than analysts in smaller brokers. As the announcement date nears, other information releases (e.g. interims) may contain enough new information to swamp or exhaust this differential, reducing the impact of broker size. This scenario would lead to broker size being of greater importance for long-horizon forecasts.

An alternative possibility is that at horizons of around two years, there is simply not enough rele-

vant information for analysts in any brokerage house to display superiority over their rivals. As more detailed information is released to the market, analysts in larger brokers may be better able to employ this data, in conjunction with their own economic and industry data (see Arnold and Moizer, 1984), thus providing improved forecasting performance. If broker size is also associated with improved links with management, these predictive gains may be further improved. This scenario would lead to broker size being of greater importance for short-horizon forecasts. A priori, it is difficult to state what impact the forecast horizon will have on this issue, if any. The US study by Clement (1999) does not address this issue.

The two-year forecast horizon is broken into four semi-annual periods: horizons of 182 days or less (SA1); horizons less than 365 days, but greater than 182 days (SA2); horizons of 547 days or less, but greater than 364 days (SA3); and horizons of 730 days or less, but greater than 547 days (SA4). These results are presented in Table 2, panel B. To investigate these questions, equation 2 is re-estimated for each of the four semi-annual sub-samples of observations.

The first point to note is that the slope for broker size (SIZE) remains negative across all four sub-periods, indicating superior performance for larger brokers. However, it can be seen from panel B that only forecasts made within one year of the target announcement (i.e. semi-annual periods SA1 and SA2) exhibit a significant broker-size effect. Remembering that forecasts in the periods SA3 and SA4 are made at horizons greater than one year, and so do not have the benefit of even the annual EPS data for the year prior to the target announcement, this result suggests that when analysts in larger brokers possess little relevant data for forecasting the target variable, they cannot demonstrate their superiority over brokers in smaller institutions. It has been recognised for some time that UK analysts' long term forecasts, beyond a one-year horizon, are often little better than simple model forecasts (see Patz, 1989: 274). If analysts' access to company managers is also a function of broker size, this too may be more influential at shorter horizons, when management will have a richer information set to disclose.

As in panel A, the results in panel B show that the sign of the slope for the market value of equity (MV) remains negative and significant. Thus, the significant superiority of forecasts for larger firms persists across the forecast horizon. Similarly, the sign of the slope for forecast horizon (HORZ) remains positive, as before. Of course, by sub-dividing the forecasts into four separate semi-annual periods, a large amount of the variation in forecast horizon is being removed, but the results are significant for periods SA1, SA2 and SA3. For

SA4 forecasts, made at horizons between 18 months and two years, the slope for HORZ is still positive but no longer significant. This possibly reflects the lack of new information released during this period, which is relevant to an announcement almost two years away.

The industry dummy coefficients for consumer goods (IND3), services (IND4) and utilities (IND5) remain negative and significant across the four periods, while the dummy coefficient for mineral extraction (IND1) remains positive. These results provide evidence that the relative ease/difficulty of forecasting for these sectors persists across the forecast horizon. In contrast, the dummy coefficient for general industrial firms (IND2) shows a steady and notable improvement as the horizon reduces, moving from significantly larger errors for the longest horizon SA4 (+3.4E-02) to significantly smaller errors for the shortest horizon SA1 (-4.7E-02). It may be that analysts' ability to assess the prospects of firms in this sector is particularly reliant on information releases near the target announcement (e.g. interims) or that long term forecasting for this industry sector is particularly difficult. Indeed, both Bhaskar and Morris (1984) and Patz (1989) report that UK analysts appear to have difficulty predicting earnings for heavy industry sectors, relative to consumer goods and services. However, the results in Table 2, panel B, suggest that while this difficulty is persistent for the mineral extraction sector, it is primarily a problem of long-horizon forecasts for the general industries sector.

The coefficients for the year dummies D1995 and D1996 reflect variations across different calendar years. These dummies indicate relative superiority for 1995 and 1996 year-end forecasts, made at longer horizons. This superiority is not evident for shorter horizons, however.

3.3. Earnings variability: the 'omitted' variable

The choice of explanatory variables for equation 2 was the product of a deliberately parsimonious approach to modelling the forecast error. However, while equation 2 controls for forecast horizon, firm size, industry sector, and calendar year (and forecast source-type is controlled implicitly), there is a remaining variable which, though common to both the Baldwin (1984) and Foster (1986) lists, has not yet been considered here and is omitted from prior UK studies of relative broker performance: earnings variability.

This could be measured as the variance of past earnings changes, but such an approach assumes: (i) that variability *per se* is related to forecasting difficulty, and (ii) that this past variability will continue into the period being forecast. Instead, this study will assess the variation in earnings during the target fiscal year, using two metrics: a

measure of the *direction* of the change in earnings, and a measure of the *magnitude* of the change. It is possible that both factors will have independent influences on forecast accuracy, a hypothesis that cannot be examined by use of a single measure of variation.

The first of these factors has been alluded to in previous UK studies, though rarely examined. Of the 31,477 observations in the dataset, 7,786 are associated with reductions in annual earnings for the fiscal year being forecast. The mean value of the forecast error (LAPE) for these observations (0.1603) is nearly twice as large as that for the 23,691 observations with non-negative earnings changes (0.084). Such a difference requires further investigation. However, another reason for examining this phenomenon is that it has potential linkage with the broker-size effect (see Section 4.1).

There is evidence from UK studies that analysts have greater difficulty in predicting earnings numbers where there is a change in the direction of earnings (Cooper and Taylor, 1983; Cooper, 1984) and, in particular, where earnings are falling (Capstaff et al. 1995: 75; Hussain, 1997: 151–52). These results are consistent with evidence from experienced market professionals suggesting that the help provided by company management may be reduced at times of poor earnings performance:

'For those professionally employed in the broking house and investing institutions, a crucial element in the profits forecasting exercise is the relationship between the forecaster and the management of the company whose profits are being forecast.....Of course, being human, company representatives are usually happy to purvey good news but tend to be elusive in more difficult times.' (Wellings 1998, p.13)

There have been suggestions that analysts may be under pressure from managers to produce optimistic earnings forecasts (O'Brien, 1988: 65). If this is true, then it may result in analysts erring on the side of optimistic growth predictions. Of course, it is also possible that analysts have genuine difficulty in predicting 'turning points' in the earnings series. There are, therefore, a number of possible explanations for analysts' poor performance in predicting earnings reductions. The differential performance of brokers documented in previous UK studies may be a reflection of the distribution of poor earnings performers across their samples: past studies contain no control for this factor. Negative changes in earnings are classified here by the dummy variable SIGN which takes a value of unity for negative changes and zero elsewhere.

H0: There is no association between SIGN and forecast error (LAPE)

H1: There is a positive association between SIGN and forecast error (LAPE)

The second factor is the magnitude of the change in earnings which the analyst must predict for the fiscal year being forecast. It is measured here by the absolute proportionate change in earnings, with a natural-log transformation (EARN).⁶ For a firm i , EARN is defined by equation 3:

$$EARN_i = \ln \left[1 + \frac{|A_{i,t} - A_{i,t-1}|}{|A_{i,t-1}|} \right] \quad (3)$$

where $A_{i,t}$ = annual EPS for fiscal year t , firm i .

The variable EARN is a measure of the variation in earnings, with regard to a specific fiscal year. It is expected that earnings prediction is more difficult where the changes in earnings are large, i.e. where there is more year-on-year earnings variability.

H0: There is no association between EARN and forecast error (LAPE)

H1: There is a positive association between EARN and forecast error (LAPE)

The addition of these two measures of earnings variability to the original regression model, gives equation 4:

$$LAPE = a_0 + a_1.HORZ + a_2.MV + \sum_{n=1}^5 a_{2+n}.INDm + a_3.D1995 + (4) \\ a_9.D1996 + a_{10}.SIZE + a_{11}.SIGN + a_{12}.EARN + \varepsilon$$

The regression results for equation 4 are presented in Table 2, panel C. They indicate that both the sign and magnitude of the earnings change are significant factors explaining UK analysts' forecast errors. The slope estimates for both SIGN and EARN are positive and significant at any reasonable probability level. The inclusion of these two variables leads to a large improvement in the explanatory power of the model, with the adjusted R-squared rising from 13.7% (panel A) to 32% (panel C). This provides some of the first evidence that the direction of the change in annual earnings (SIGN) is a significant factor affecting the accuracy of earnings forecasts. The significant slope for the magnitude of the earnings change (EARN) is to be expected since it is a measure of earnings variability for the year being forecast.

The other slope coefficients remain little changed, relative to the results for equation 2 (panel A). The findings reiterate the importance of broker size, along with the more traditional explanatory variables employed in the model.

⁶ Unlike other variables used here, the log-transformation of this variable leads to an increase in R-squared of around 4%, relative to its raw value.

Indeed, it can also be noted that repeating the semi-annual analysis using model 3 (results untabulated) generates similar conclusions with respect to the broker size effect, to those for model 2 (reported in panel B): the SIZE slope estimates for SA1, SA2, SA3 and SA4 are all negative ($-8.7\text{E-}05$; $-1.6\text{E-}04$; $-1.1\text{E-}05$; $-1.6\text{E-}05$). However, as before, the t-values are only significant for the two shortest horizon periods SA1 ($t = -2.74$) and SA2 ($t = -4.77$); t-values are not significant for the two remaining semi-annual periods SA3 ($t = -0.25$) and SA4 ($t = -0.28$).

What these results show is that measures of earnings variability for the year being forecast (SIGN, EARN) and the size of the brokerage house in which analysts are employed (SIZE) are associated with cross sectional variation in UK brokers' forecast errors. It is likely that the inter-broker differentials reported in prior UK studies were due, in part, to the lack of control for such factors.

3.4. A note on the economic relationship between forecast error and broker size

The dependent variable for this study, LAPE, is the natural log of $(1 + \text{absolute proportionate error})$ as defined in equation 1. The broker size variable, SIZE, is not log transformed, so omitting the other variables for simplicity, we have a semi-log linear relationship: $\ln Y = \alpha + \beta.X + \epsilon$, where Y equals $(1 + \text{absolute proportionate error})$, X is broker size (SIZE), α and β are model parameters, and ϵ is a random error following the usual OLS assumptions. This implies a relationship between Y and X of the form: $Y = \exp\{\alpha + \beta.X + \epsilon\}$. Since the coefficient β is negative, the results of this study suggest that our Y variable $(1 + \text{absolute proportionate error})$ falls as the X variable (SIZE) increases, but in a manner consistent with diminishing marginal returns to broker size (see Johnston, 1984: 66 and Studenmund, 1992: 219). The resulting negatively sloped convex curve⁷ implies that each successive unit increase in SIZE leads to a reduction in $(1 + \text{absolute proportionate error})$ which is smaller than for the previous unit increase in SIZE. These semi-log relationships are frequently employed in business and economic research (Studenmund, 1992: 220) and suggest that any future studies of the broker size effect will need to ensure that they include a wide range of broker sizes: a concentration on only the largest brokers may provide only limited evidence of a broker-size effect.

⁷ For this functional form, the slope (dY/dX) is equal to $(\beta.Y)$, and since β is negative it can be seen that the marginal reductions in the forecast error measure $(1 + \text{absolute proportionate error})$ become smaller as broker size increases, and the corresponding level of Y $(1 + \text{absolute proportionate error})$ reduces (see Griffiths et al. 1993: Table 8.3).

4. Discussion of additional issues

4.1. Corporate economic fortunes and broker size

An important finding of this study is the apparent difficulty analysts have in predicting future earnings where the target EPS value is smaller than the previous year's realised value (i.e. where $\text{SIGN} = 1$). The highly significant positive slope for the SIGN dummy in Table 2, panel C, confirms suggestions from prior studies of analysts' forecasts that falling earnings numbers pose problems for analysts. This may be related to the analyst-manager relationship, and a reluctance on the part of analysts to signal bad news in the form of predicted earnings reductions. However, it is also likely to reflect difficulties in assessing the impact of economic and industrial trends, and the timing of firm-specific downturns. For analysts in well resourced brokerage houses, with access to economic and industry expertise and appropriate IT facilities/databases, it may be expected that these problems would be lessened. Of course, greater access to management could also provide large brokers' analysts with a source of additional insight. Thus, the predictive gains to broker-size may be greater in cases where annual earnings are falling.

To examine this hypothesis, the regression equation 2 is re-run on two sub-samples: observations where $\text{SIGN} = 1$ and observations where $\text{SIGN} = 0$. The untabulated results show that broker size remains a significant explanatory variable for both sub-samples. For observations where earnings are rising ($\text{SIGN} = 0$) the slope for the broker size variable is negative ($-6.2\text{E-}05$) and significant at less than a 1% level ($t = -2.77$). For companies experiencing falling earnings ($\text{SIGN} = 1$) the slope for SIZE is also negative but around four times larger in absolute terms ($-2.6\text{E-}04$) and again is significant at less than a 1% level ($t = -4.25$). These results indicate that while broker size is associated with superior forecast accuracy, the predictive gains may be greater for firms with falling earnings, which are generally more difficult to predict.

4.2. Broker size and optimism

It has been recognised in past US and UK studies that analysts may have a tendency to generate overly optimistic forecasts for corporate earnings numbers. This may be due to pressure from company managers, upon whom they rely for information (O'Brien, 1988: 65) and because there may be financial incentives to generate trading through optimistic predictions (DeBondt and Thaler, 1990: 55). If, as Marston (1999: 49) reports, UK companies consider the attentions of large financial institutions to be more important than smaller institutions, it is possible that analysts in larger (smaller) brokers may feel under less (more) pressure to win favour with managers by issuing opti-

mistic forecasts. Forecast optimism (OPT) can be assessed using equation 5:

$$OPT_{i,j} = \left(\frac{F_{i,j} - A_i}{|A_i|} \right) \times 100 \quad (5)$$

where, A_i is the actual EPS value of firm i , and $F_{i,j}$ is the forecast of A_i by broker j . This is a *signed* percentage forecast error metric. The more positive (negative) the value of OPT, the more optimistic (pessimistic) the forecast relative to the actual EPS value. The value of OPT ranges from -787% to +400%, with a small positive mean of +1.28%. There is even less theoretical background to the modelling of forecast optimism than for forecast accuracy. However, there is evidence that systematic errors may vary with forecast horizon and firm size (see Capstaff et al. 1995; Hussain, 1996). In order to control for variation in optimism across industries, years, horizons and firm characteristics, the same regression analysis which was applied to LAPE (equation 2) is applied to OPT, with one difference. The UK study by Capstaff et al. (1995: 75) note the potential reluctance of analysts to predict negative changes in earnings. Thus, the variable SIGN is also included in the set of explanatory variables.

The untabulated regression results generate two note-worthy findings. Firstly, over-optimism is significantly greater where earnings numbers are falling: the coefficient for SIGN is positive (18.88) and highly significant ($t = 61.21$). In fact, excessive optimism in the face of falling earnings is consistent with analyst reluctance to signal bad news in their forecasts, but could also result from an inability to predict sudden down-turns in a company's fortunes.

Second, over-optimism is a negative function of broker size: the slope for SIZE is negative ($-1.0E-02$) and significant at the 5% level ($t = -2.23$). Greater optimism by smaller brokers' analysts may reflect a desire to win favour with companies. It may also reflect the stronger position that analysts in large brokers feel themselves to be in, with regard to resisting pressure for optimistic forecasts, because companies consider contact with large institutions' analysts to be important. These results remain even where OPT is censored at $\pm 100\%$. While forecast optimism is not the primary concern of this study, these findings provide further evidence that brokerage house size is a factor that must be considered when examining the properties of earnings forecasts.

4.3. Future research and limitations

This study provides evidence that the performance of analysts, with regard to forecasting corporate EPS numbers for FTSE-100 companies, is associated with the size of the analyst's institution.

Possible explanations for this association are provided in the earlier sections of this paper. Future research may provide a more detailed explanation of this phenomenon, through in-depth interviews with analysts, or on-site observation studies of how analysts work within the brokerage house environment and their interaction with staff in the support teams. Such an approach could also reveal the extent to which any broker-size differential is the result of superior human and IT resources, or the result of superior access to company managers. This question is difficult to address within the format of the current study, which is primarily concerned with investigating whether a broker-size effect is observable for UK data.

A second avenue for further research is an examination of the market's reaction to buy and sell recommendations. If broker size is a proxy for greater resources, and possibly greater access to company management, then it may be expected that a broker-size effect may be observed with regard to the market's reaction to forecast revisions. Evidence from the US market (Stickel, 1995) suggests such an effect exists with regard to the market's reaction to buy and sell recommendations.

A limitation to this study is the measurement of broker size using a single metric – the number of analysts identified on the I/B/E/S database. The rationale for this metric was given in Section 2.3, but the research design could be enhanced by including different dimensions to the broker size effect. In addition to the number of analysts employed, there may be incremental information in other size-related variables, such as measures of IT resources and support teams. These data are not readily available to researchers, but may be observable through on-site studies or surveys of UK brokers. Another potential limitation of measuring broker size by the number of analysts identified on the I/B/E/S database is that for 1995 year ends, a much smaller number of analysts are *identified* than is the case in 1997, while the number of uncoded (i.e. unidentified) analysts is much greater.

The dataset for this study was provided freely by I/B/E/S International Inc. for academic research purposes. Unfortunately, the dataset does not allow identification of which brokerage houses act as brokers to particular companies. The issue is a topical one, especially in relation to the disastrous performance of many 'dotcom' companies in recent times. It is possible that this is another important institutional dimension which could be included in future analyses. However, evidence from the pre-dotcom era, both in the US (Dugar and Nathan, 1995) and the UK (Hussain, 1996) suggests that while this broker-company relationship may be associated with some degree of over-optimism, the overall impact on forecast accuracy is not significant. In addition, the market's reaction to these

forecasts is, if anything, less where there is a relationship between broker and company (Forbes and Skerratt, 1992; Dugar and Nathen, 1995).

5. Conclusion

The main finding of this study is that brokerage house size is a significant factor explaining cross-sectional variation in the accuracy of UK brokers' EPS forecasts. This finding is consistent with recent evidence from the US and is likely to be the result of the superior resources available to support their analysts' activities, and possibly superior access to company management. If this superiority is reflected in their activities more generally, then it may be expected that UK investors will respond more to the buy and sell recommendations of the largest brokers. This hypothesis is not investigated here, but Stickel (1995) provides evidence of this phenomenon in US markets. The findings support the view that institutional factors can help explain capital markets phenomena. However, the significant impact of broker size appears to be limited to the forecasts made at a one year horizon or less, i.e. short term forecasts.

Another important finding is the apparent difficulty brokers' analysts have in predicting reductions in corporate earnings numbers. This matter has been alluded to in a number of previous UK studies, but is rarely controlled. It may reflect a genuine difficulty in forecasting 'turning points', or may be symptomatic of analysts' desire to maintain good relations with company managers. These observations appear to pose less of a problem for analysts in larger brokers, however: the predictive gains to broker size, as measured by the regression slope for SIZE, are around four times greater for this sub-sample of observations.

This study provides evidence that the brokerage house environment is an important dimension to understanding analysts' activities. It is also likely to be a source of the relative differences in broker performance, documented in prior UK studies (e.g. Bhaskar and Morris, 1984; Taylor and Ward, 1985; CPR99). However, this study also reiterates the importance of controlling for the most commonly cited explanatory variables, and the sign of the change in annual earnings.

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Auditor economic incentives and going-concern opinions in a limited litigious Continental European business environment: empirical evidence from Belgium

Ann Vanstraelen*

Abstract—Theory predicts that auditor reporting behaviour may be influenced by the perceived consequences of disclosing going-concern uncertainty in the audit report (DeAngelo 1981, Watts and Zimmerman 1986). Krishnan and Krishnan (1996) and Louwers (1998) have addressed this issue empirically in a US context. The results of Krishnan and Krishnan (1996) suggested that one of the important factors in the auditor's opinion decision is the risk of litigation. The purpose of this study is to examine the relationship between auditor economic incentives and the propensity to issue going-concern opinions in a limited litigious business environment, Belgium. In spite of the low risk of litigation and the fact that most Belgian companies are privately held, various regulations have been put into effect to safeguard audit quality in Belgium. However, the results suggest that the auditor's going-concern opinion decision in Belgium is associated with factors relating to the perceived consequences of disclosing a going-concern opinion. Specifically, the results suggest that auditors in Belgium are significantly less likely to issue going-concern opinions to clients that pay higher audit fees, and when the audit firm has lost a relatively high proportion of its clients in the preceding year. The auditor's going-concern opinion does not appear to be significantly influenced by the length of the auditor-client relationship, year of the auditor engagement period, and auditor type. The results of this study are to some extent different from the study by Louwers (1998), in which none of the incentive variables related to the auditor's loss function was significant.

1. Introduction

In the literature, it is argued that auditor reporting behaviour may be influenced by the perceived consequences of disclosing going-concern uncertainty in the audit report (DeAngelo, 1981a; Watts and Zimmerman, 1986). It is suggested that an auditor deciding to disclose going-concern uncer-

tainty in the audit report potentially faces economic trade-offs, in terms of expected costs of losing a client, being exposed to third-party lawsuits and loss of reputation (Krishnan and Krishnan, 1996: 566).

This issue was addressed empirically in a US context by Krishnan and Krishnan (1996) and Louwers (1998). Krishnan and Krishnan's results (1996: 583) suggested that one of the important factors in the auditor's opinion decision is the risk of litigation. Louwers (1998: 154) did not find evidence to support the contention that auditors' going-concern opinion decisions are systematically influenced by incentives associated with the auditor's loss function.

This study aims at examining the relation between auditor economic incentives and the propensity to issue going-concern opinions in a limited litigious business environment, i.e. Belgium. The choice of a continental European country is motivated by the fact that nearly all published studies on the auditor's going-concern opinion decision and its related aspects focus on an

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Anglo-American business environment. Hopwood et al. (1994: 426) stressed the importance of research on the auditor's going-concern opinion decision in other than Anglo-American countries.

Despite the low risk of litigation and the fact that most Belgian companies are privately held, various regulations have been put into effect to safeguard audit quality in Belgium. However, this study provides empirical evidence which suggests that the auditor's going-concern opinion decision in Belgium is associated with factors relating to the perceived consequences of disclosing a going-concern opinion. In particular, auditors in Belgium appear to be significantly less likely to issue a going-concern opinion to a client that pays higher audit fees, and when the audit firm has suffered client losses in the preceding year. In addition, this study shows that the auditor's going-concern opinion decision is significantly related to: the financial condition of the client; the location of the client; a delay in the holding of the annual general meeting of shareholders, which may suggest lengthy auditor-client negotiations and extensive auditor testing; and bad news in the annual report of the Board of Directors, which tends to decrease the conflict of interest between the auditor and the client management.

The remainder of the paper is organised as follows. First, as a general background, prior research on the auditor's going-concern opinion decision is briefly discussed. Second, the characteristics of the Belgian audit services market are discussed. Third, the research design and research methodology are discussed. Fourth, the results of the analysis are presented. Finally, conclusions are drawn.

2. Background

During the past two decades, auditors' responsibility for assessing the appropriateness of the going-concern assumption in the financial statements of their clients has become the subject of much debate in the auditing profession and considerable research by academics. This increased attention is due to the fact that auditors appear to be reluctant to disclose existing going-concern problems in their audit reports. Indeed, many companies in the year prior to bankruptcy receive an audit report in which no going-concern uncertainty is disclosed (Menon and Schwartz, 1987; Hopwood et al., 1991; Citron and Taffler, 1992; Carcello et al., 1997; Lennox, 1999a). Moreover, the ability of going-concern opinions to predict or identify failing companies is inferior to bankruptcy prediction models (Mutchler, 1985; Koh and Kilough, 1990; Hopwood et al., 1991; Nogler, 1995). This is a peculiar observation, as one would expect auditors, who after all have access to internal information, to have more relevant data at their disposal. This raises questions about auditors' behaviour in re-

sponse to a going-concern uncertainty and how the auditor arrives at the going-concern opinion decision.

On the basis of the going-concern opinion literature, it can be stated that the auditor's going-concern opinion decision consists of two stages (Krishnan and Krishnan, 1996: 567). In the first stage, the auditor evaluates information to form an initial impression of an entity's financial condition. In the second stage, the auditor will decide on the type of audit report to be issued. Referring to DeAngelo's (1981b) definition of audit quality, the first stage depends on the auditor's competence, while the second stage depends on the auditor's independence. Research has confirmed that auditors have the ability to identify a company with going-concern problems (Kida, 1980; Campisi and Trotman, 1985; Citron and Taffler, 1992; Barnes and DenHuan, 1993). However, auditor independence has been questioned. It has been suggested in the literature that if an auditor acts as a rational economic agent, the auditor may be influenced by the perceived consequences of issuing a going-concern report (DeAngelo, 1981a; Watts and Zimmerman, 1986). Risk of litigation, risk of loss of reputation and risk of audit loss are factors suggested in the literature which may relate to the economic trade-offs faced by the auditor (Krishnan and Krishnan, 1996: 566). Consequently, these factors could influence the auditor's going-concern opinion decision. Audit loss subsequent to the issuance of a going-concern opinion can occur due to auditor switching or due to bankruptcy of the client. The belief that a client will go bankrupt as a result of a going-concern uncertainty disclosure in the audit report is known in the literature as the self-fulfilling prophecy hypothesis (Mutchler, 1984: 24). The risk of litigation and risk of loss of reputation may have a positive effect on auditor independence, while the risk of audit loss may compromise auditor independence.

Two previous studies (Krishnan and Krishnan, 1996; Louwers, 1998) based on US data examined the role of economic trade-offs in the auditor's opinion decision. Louwers (1998: 154) did not find evidence to support the contention that auditors' going-concern opinion decisions are systematically influenced by incentive factors associated with the auditor's loss function. The following incentive factors were included in the study: prospective audit fees, the length of the auditor-client relationship, recent auditor litigation, client losses and the existence of previously disclosed evidence of going-concern difficulties. Krishnan and Krishnan (1996: 583) provided evidence that the auditor's litigation risk is an important factor in the auditor's opinion decision. Auditors in the US may perceive that the risk of litigation exceeds the potential losses of not disclosing going-concern

uncertainty. The results of a study based on Flemish companies¹ (Vanstraelen, 1999: 53) suggest that recent client loss on the part of the auditor appears to moderate the willingness of the auditor to disclose going-concern uncertainty. Caution is needed with respect to the generalisation of these results given the small sample size and the fact that the observations relate to one year and to one part of the country.

Theoretical research (Melumad and Thoman, 1990; Dye, 1993; Acemoglu and Gietzmann, 1997) has demonstrated the crucial role legal liability plays in safeguarding auditor independence. Analytically, it has also been shown that it is less costly for auditors to be conservative with clients that are nearing bankruptcy, since the type II error cost (misclassification of a failing company as a non-failing company) is typically larger than the type I error cost (misclassification of a non-failing company as a failing company) (Matsumara et al., 1997: 731). Recently, these theoretical findings were supported by empirical evidence in the US (DeFond and Subramanyam, 1999). Moreover, Carcello and Palmrose (1994: 2) reported that bankruptcy is one of the most frequent sources of litigation against auditors: 74% of the auditors of clients that go bankrupt are sued.

The purpose of this study is to assess whether the auditor's propensity to disclose going-concern uncertainty is influenced by economic incentives related to the auditor's loss function in a limited litigious Continental European business environment. The incentive variables considered in this study are: expected audit revenues, recent loss of audit clients, tenure and auditor type. The first three incentive variables were also used by Louwers (1998). It has been shown that litigation rates in Continental Europe are rather low in comparison with the US and the UK (Kinney, 1994; Mueller et al., 1994; Gietzmann and Quick, 1998). This study will be carried out in Belgium: a typi-

cal Continental European country. In Belgium, accounting is governed by legal rules, banks and other financial institutions play a central role in corporate financing, financial reporting is strongly influenced by tax considerations and financial reporting is creditor oriented (Lefebvre and Flower, 1994; Block and Jorissen, 1995). In addition, most Belgian firms are privately held and ownership is concentrated in both family-owned as well as public companies. Given the rather limited litigious business environment in Continental Europe, concern arises as to whether the independence of auditors is compromised or whether it is safeguarded by other incentives.

3. Characteristics of the Belgian audit services market²

The purpose of this section is to provide an overview of the Belgian institutional framework within which the results of this study should be interpreted. Audit regulation in Belgium is discussed by focusing on the following aspects: audit requirement; auditor independence; auditor liability; and auditor reporting.

3.1. Audit requirement

The statutory audit of companies in Belgium is governed by Company Law. Companies that meet specific legal form and size criteria³ are required to have their financial statements audited by a member of the Institute of Auditors.⁴ The statutory auditor needs to examine the company's financial situation and its financial statements, consisting of the balance sheet, the profit and loss account and the notes. Subsequently, the auditor has to form an opinion as to whether the financial statements convey a faithful picture (Nobes, 1993: 42) of the company's shareholders' equity and the financial position at the balance sheet date, and whether the year's results are in accordance with the legal and administrative requirements. The audit has to be conducted in accordance with the generally accepted auditing standards promulgated by the Institute of Auditors (Block and Jorissen, 1995). The General Meeting of Shareholders appoints the statutory auditor on the basis of a recommendation by the Board of Directors. The term of appointment is three years, which can subsequently be renewed without limitation for further three-yearly periods. A works council has the right to refuse the appointment of the nominee auditor and defend this position in court. There are works' councils in all Belgian companies and institutions that employ on average more than one hundred workers. The works council is a body with equal representation of employers and employees. Its purpose is to implement social legislation. The works council is entitled to adequate financial and economic information about the entity. Auditors can only be dis-

¹ Belgium consists of two major parts: Flanders and Wallonia. Flanders is the Flemish-speaking part, while Wallonia is the French-speaking part.

² The following description is based on Lefebvre and Flower (1994), Block and Jorissen (1995), Buijink et al. (1996), Meuwissen (1999), Vanstraelen (2000), and Gaeremynck and Willekens (2001).

³ The Law on Bookkeeping considers a company to be large if it either exceeds more than one of the following criteria: (i) average number of persons employed on annual basis is 50; (ii) annual turnover, exclusive VAT, 6,250,000; (iii) balance sheet total, 3,125,000 or whose average number of employees during the period exceeds 100.

⁴ The Institute of Auditors is a public institute under the authority of the Ministry of Economic Affairs and is assisted by the High Council for Auditing and Accounting. Belgian Company Law requires that statutory audits of entities under prudential control (e.g. listed companies, banks and other financial institutions, insurance companies and hospitals) can only be performed by auditors approved by the various official bodies regulating those industries.

missed during their mandate under very exceptional circumstances.⁵ Resignation of the auditor during his mandate is likewise restricted.

3.2. Independence

The statutory auditor in Belgium is subject to a strict code of ethics and auditing standards. Many of the regulations are aimed at protecting auditor independence. The principal regulations concerning auditor independence are the following. Auditors are not allowed to accept an engagement when they have a personal or commercial relationship with the client, a financial interest in the client or fee-dependence. Moreover, it is prohibited for an auditor to accept an engagement if he has been a director or manager of that client in the past three years. It is also forbidden for audit firms to provide other services (e.g. tax, legal services, consulting) to an audit client within the same legal entity, with the exception of the provision of bookkeeping and accounting services on an ad hoc and non-recurring basis. Auditors are not allowed to be employed full-time outside the auditing profession. If so, they lose their licence. Furthermore, all forms of advertising and unsolicited offerings of services to the public in general are forbidden. The auditing profession has also created some mechanisms to monitor its members. Auditors are required to report to the Institute of Auditors the number of hours worked for and the fee charged to each of their clients. Moreover, each audit firm is subjected to a peer review at least once every five years. Finally, the Institute of Auditors imposes disciplinary sanctions against auditors violating the Ethical Code.

3.3. Liability

The auditor's report and the financial statements have to be filed with the Belgian National Bank and are publicly available. Legal action against an auditor in Belgium can be undertaken by the client company, its shareholders, or any interested third party. Belgium has adopted the proportional liability system, placing liability upon the defendants according to their contribution to the damage. However, liability can neither be capped by law nor by contract. Belgian statutory auditors are not required to maintain professional indemnity insurance. Legal action against a statutory auditor can be undertaken within the five years after the issue of the auditor's report. Litigation rates in Belgium

are low (Vanstraelen, 1999; Gaeremynck and Willekens, 2001). This is a typical characteristic of countries which have government-prescribed accounting standards that are rather conservative, while banks or the government are the major providers of capital (Mueller et al., 1994).

3.4. Audit report

The auditing standards with respect to the form and content of the Belgian audit report are issued by the Institute of Auditors. The Belgian auditing profession distinguishes between six types of audit opinions to be issued under specific circumstances: an unqualified opinion; an unqualified opinion with an explanatory paragraph; a qualified opinion; a qualified opinion with an explanatory paragraph; a disclaimer of opinion and an adverse opinion. An important characteristic of the Belgian audit report is the fact that it contains two parts. The first part of the audit report, which is similar to the audit report in most countries, provides an opinion on the financial statements. The statutory auditor describes the applied auditing standards, the objectives of the audit, how he has carried out the audit, and whether he has obtained all the required information and explanations from the directors and management. The auditor concludes with an opinion on whether the annual accounts give a faithful picture (Nobes, 1993: 42) of the company's net worth, the financial position and the results of the year. The second part of the Belgian audit report is different from most countries as it provides additional statements and information, which are required by Company Law (Article 144). In particular, the auditor expresses an opinion on whether the annual report of the Board of Directors contains the information required by law and agrees with the annual accounts. The additional statements and information are primarily for the use of the works council in order to better inform and protect employees.

If the auditor is confronted with significant going-concern problems, he will draw attention to this fact in the first part of his audit report. The auditor is also required to modify the second part of his report if he feels that the annual report does not contain the information required by law, i.e. a justification for the continuation of business operations if necessary. The following situations may occur. First, if the Board of Directors has described the going-concern uncertainty correctly in its annual report or in the notes to the financial statements, the statutory auditor will issue an unqualified report regarding this item. However, he is required to elucidate his judgment in an explanatory paragraph⁶ in which attention is drawn to the existence of a risk in terms of continuity. Second, if the Board of Directors has provided inappropriate information in the notes to the annual

⁵ For example, physical incapacity or negligence resulting in a loss of confidence.

⁶ It is noted that during the period under study 1992–1996, the subtype of audit opinion 'unqualified audit opinion with an explanatory paragraph' was not yet recognised by the Belgian Institute of Auditors. However, 4 out of the 1,176 companies in our sample did receive an unqualified report that mention going-concern problems. These four reports were coded as reports disclosing a going-concern uncertainty.

statements or in the annual report, the statutory auditor will issue a qualified opinion. Third, a disclaimer of opinion is justified if the statutory auditor is unable to collect the required information for evaluating the going-concern status of the company. Finally, if the statutory auditor concludes after his audit that the going-concern assumption used by the Board of Directors for the preparation of the annual statements is inappropriate, he will issue an adverse opinion. If there is a difference of opinion regarding the going-concern assumption used by the Board of Directors, he will issue an adverse opinion that mentions explicitly that this difference of opinion exists.

4. Research design and research methodology

4.1. Sample

While standard American databases like Compustat allow going-concern researchers to search on the type of audit report (standard unqualified report, modified unqualified report, qualified report, disclaimer report and adverse report), this is not possible with Belgian databases.⁷ Therefore, a different sample design was chosen. The design of the study started from the entire population of large⁸ Belgian companies that went bankrupt in the period 1992–1996. For each large company that was declared bankrupt in the period 1992–1996, we attempted to collect the audit report on the financial statements submitted to the Belgian National Bank in the year prior to bankruptcy. Companies for which no data were available were excluded (30%). Excluding companies belonging to the same group of companies (6%) further reduced the number of bankrupt companies included in the sample. Only one bankrupt compa-

ny, usually the parent company of the group of bankrupt companies was included in the sample. This procedure was followed to avoid double counts, since the same auditor would issue the same audit opinion to all companies of the group that went bankrupt. The final sample contained 392 bankrupt companies. Subsequently, a second sample was created containing 392 financially stressed non-bankrupt large Belgian companies. Using common criteria in the literature (Mutchler, 1985; Hopwood et al., 1994), a company is considered to be financially stressed if it has either suffered an operational loss, a bottom line loss, or negative retained earnings in the current year or previous two years or has a negative working capital in the previous two years.

Finally, a control sample containing 392 financially non-stressed non-bankrupt large Belgian companies was created. Menon and Schwartz (1985: 255) stressed the importance of matching control groups of companies by industry and size. Hence the three samples were matched by year, industry (using four-digit NACE-code) and size (based on total assets). The sample design of this study is similar to the UK study of Citron and Taffler (1992). However, in this study an additional control sample is created containing financially non-stressed non-bankrupt firms. For each of the three samples of companies, Table 1 illustrates the financial condition and the proportions of type of audit reports issued to these companies.

The financial condition of a company is measured by the general discriminant score (DSCORE) of a standard bankruptcy prediction model developed for Belgian companies.⁹ The descriptive statistics in Table 1 show that the sample of bankrupt companies is more financially stressed compared with the sample of financially stressed non-bankrupt companies. Table 1 further shows that after analysing the audit reports issued to the 392 bankrupt firms in the sample one year prior to bankruptcy, it appears that only in 37% of the cases is a going-concern uncertainty disclosed. In other words, in 63% of the cases auditors did not mention going-concern problems one year prior to bankruptcy. Comparison of this base-rate frequency with similar research in the US shows that the proportion of bankrupt companies with a going-concern qualification in the US is on average higher, ranging from 39% to 54% prior to SAS-59 and from 54% to 62% since the implementation of SAS-59¹⁰ (Koh, 1991; Raghunandan and Rama, 1995; Carcello et al., 1997). This finding is in line with the expectation that auditors in continental European countries are more reluctant to express going-concern uncertainty in the audit report, possibly due to the differences in the legal and institutional environment between continental European countries and the US.

⁷ CDROMs containing the financial statements of Belgian companies submitted to the Belgian National Bank.

⁸ A company is considered to be large if it either exceeds more than one of the following criteria: (i) average number of persons employed on annual basis is 50; (ii) annual turnover, exclusive VAT, BFr.145m; (iii) balance sheet total, BFr.70m or whose average number of employees during the period exceeds 100. These size criteria were adjusted by Article 1, Royal Decree 27 April 1995 into: annual turnover, exclusive VAT, BFr.200m and balance sheet total, BFr.100m. It is noted that the size criteria were revised again recently and apply to companies with fiscal year end 31 December 1999: annual turnover, exclusive VAT, 6,250,000 and balance sheet total, 3,125,000.

⁹ The DSCORE is calculated from the general multiple linear discriminant model, developed for Belgian companies, consisting of the following ratios: accumulated profit (loss) & reserves/total liabilities; taxes and social security charges/short-term external liabilities; cash/restricted current assets; work in progress & finished goods/restricted current assets; short-term financial debts/ short term external liabilities. The DSCORE of the general bankruptcy prediction model has a prediction accuracy of 75.6% when using the optimal cut-off point of DSCORE=0.1304 (Ooghe and Van Wymeersch, 1991; Ooghe, Joos and de Bourdeaudhuij, 1995).

Table 1
Sample proportions, financial condition and type of audit reports issued

<i>GLOBAL: 1992–1996</i>	<i>Sample bankrupt firms n = 392</i>	<i>Sample financially stressed non- bankrupt firms n = 392</i>	<i>Sample financially non-stressed non- bankrupt firms n = 392</i>	<i>Total n = 1176</i>
DSCORE ¹	mean: -2.77 25th percentile.: -1.68 median: -0.58 75th percentile.: 0.07	mean: -0.47 25th percentile.: -0.90 median: -0.09 75th percentile.: 0.56	mean: 1.48 25th percentile.: 0.61 median: 1.23 75th percentile.: 2.27	
Unqualified audit report	163 (41.6%)	293 (74.8%)	370 (94.4%)	
Other than unqualified audit report:				
<i>because of going-concern uncertainty</i>	145 (37%)	53 (13.5%)	0 (0%)	
by issuing:				
qualified opinion	102 (70%)	49 (92%)		
disclaimer of opinion	35 (24%)	4 (8%)		
adverse opinion	8 (6%)	0 (0%)		
<i>because of other reasons</i>	84 (21.4%)	46 (11.7%)	22 (5.6%)	
by issuing:				
qualified opinion	60 (71%)	34 (74%)	17 (77%)	
disclaimer of opinion	21 (25%)	12 (26%)	5 (23%)	
adverse opinion	3 (4%)	0 (0%)	0 (0%)	

¹DSCORE: The financial condition of a company is measured by the general discriminant score of a standard bankruptcy prediction model developed for Belgian companies. The DSCORE is calculated from the general multiple linear discriminant model consisting of the following ratios: accumulated profit (loss) & reserves/total liabilities; taxes and social security charges/short-term external liabilities; cash/restricted current assets; work in progress & finished goods/restricted current assets; short-term financial debts/ short term external liabilities. The DSCORE of the general bankruptcy prediction model has a prediction accuracy of 75.6% when using the optimal cut-off point of DSCORE=0.1304 (Ooghe and Van Wymeersch 1991, Ooghe, Joos and de Bourdeaudhuij 1995).

¹⁰ In the US the auditor's responsibility with respect to the going-concern issue has been increased by replacing in 1988 SAS-34 ('The auditor's considerations when a question arises on an entity's continued existence') with SAS-59 ('The auditor's consideration of an entity's ability to continue as a going concern'). The main consequence of the change of standard is that the task of assessing a company's ability to continue as a going concern has been transformed from a negative into an affirmative duty.

¹¹ Gaeremynck and Willekens (2001) selected a sample of 114 Belgian companies that had terminated their business operations due to bankruptcy or voluntary liquidation in 1995 or 1996, and reported that 45.61% received an unqualified opinion. A subdivision of the results between bankrupt and liquidated firms showed that of the 52 bankrupt firms 21% received an unqualified opinion in the year prior to bankruptcy, whereas of the 62 liquidated firms 66% received an unqualified opinion in the year prior to liquidation. It is noted that the 392 bankrupt companies included in my sample represent all companies that were declared bankrupt in the period 1992–1996 of which the audit report one year prior to bankruptcy was available.

Besides focusing on going-concern uncertainty disclosure (GCUD), one can also look at all audit reports issued other than unqualified. It appears that auditors do not mention any problem in 41.6% of the cases.¹¹ When comparing this percentage with the percentage of no going-concern uncertainty disclosure, one could deduce that there are three types of auditor reporting behaviour:

1. Issue a qualified opinion, disclaimer of opinion or adverse opinion in which going-concern uncertainty is disclosed;
2. Issue a qualified opinion, disclaimer of opinion or adverse opinion without disclosing going-concern uncertainties;
3. Issue an unqualified audit report without mentioning any kind of problem.

The second type of auditor reporting behaviour could be considered as a kind of substitution. The

auditor substitutes the disclosure of going-concern problems by the disclosure of other types of problems. The proportions of other types of problems disclosed in the audit reports for bankrupt companies that are not unqualified (qualified opinion, disclaimer of opinion and adverse opinion) are: valuation assets (23%); bad debts (21%); weak system of internal control (16%); first year of first audit mandate (12%); contingent liabilities (7%); scope limitation (2%); more than one of these problems (19%). These other types of problems could actually lead to bankruptcy, but it is not explicitly mentioned. It is left to the judgment of the users of the financial statements.

Table 1 further shows that of the 392 financially stressed non-bankrupt companies in year *t*, nearly 75% received an unqualified audit report in year *t*-1. In 13.5% of the cases, potential going-concern problems were disclosed. Approximately 12% of the companies received a qualified report, disclaimer of opinion or adverse opinion, without an explicit going-concern uncertainty disclosure. Finally, Table 1 shows that the total control sample of financially non-stressed non-bankrupt companies contains 392 firms of which nearly 95% of the firms received an unqualified audit report.

4.2. Model variables

INCENTIVE VARIABLES

The primary focus of this study is to see whether auditors' incentives related to the auditor's loss function significantly influence the auditor's going-concern opinion decision. Four variables are considered which relate to the auditor's loss function.

First, the economic interest of the auditor in a client is a crucial factor in the auditor's loss function. Two variables are used to measure the economic interest of an auditor in a client. The first variable is the auditor's revenues from the auditor-client relationship (LNFEED). It is expected that higher audit fees will decrease the willingness of the auditor to disclose going-concern uncertainty. Given the fact that information on actual audit fees is not publicly available, a proxy is needed. Audit fees are proxied by the natural logarithm of the sum of operational and financial revenues. This proxy is supported by the fact that the Belgian Institute of Auditors (IBR) developed scales for audit fees, based on the average number of audit working hours, which is considered to depend on the sum of total assets, operational and financial revenues. Total assets are not included in the audit fee proxy since it was one of the matching criteria for the non-bankrupt companies. The fact that there may be economies of scale in auditing, in the sense that large audits cost less per unit of asset or transaction audited than small audits, is usually dealt with by making the size variable a logarithmic function (Pong and Whittington, 1994).

The second variable is recent loss or gain of audit clients (CLIENTLOSS) to measure the economic interest of an auditor in a client. Recent client loss or gain was measured by the net change in the number of clients during the previous year, scaled by the total number of clients of the audit firm.¹² Recent loss of audit clients may either increase the economic incentives of the audit firm to retain its current clients or may be related to audit firm conservatism (Louwers, 1998: 148).

The third variable is the type of auditor: Big 6 audit firm or non-Big 6 audit firm (B6NB6).¹³ Large audit firms are assumed to deliver better quality (DeAngelo, 1981b; Palmrose, 1988; Davidson and Neu, 1993; Lennox, 1999b) by being not only more capable of discovering a breach in the client's accounting system but also more willing to disclose the breach due to reputation concerns. Therefore it is expected that Big 6 audit firms will be more likely to disclose going-concern uncertainty compared to non-Big 6 audit firms, all other things equal.

Fourth, the length of the auditor-client relationship (TENURE) may also be related to the auditor's loss function and affect the auditor's going-concern opinion decision. Based on the common perception that long tenure would compromise auditor independence (Levinthal and Fichman, 1985; Deis and Giroux, 1992), it is expected that long tenure will decrease the likelihood of the auditor to disclose going-concern uncertainty.

Finally, Belgian legislation requires a minimal length of the audit mandate of three years. During their mandate, auditors can be dismissed only under very exceptional circumstances. The audit mandate can be renewed without limitation, but always for three-yearly periods. Therefore, it is questioned whether the auditor's reporting behaviour in the first years of the audit mandate differs from the last year of the mandate (MANDATE). It could be expected that the incumbent auditor is more willing to make compromises with the client's management in the last year of his official mandate in the hope of renewing his mandate.

It is acknowledged that there may be other incentive variables related to the auditor's loss function which are not captured by the model. An example would be the provision of management advisory services. The impact of the provision of management advisory services on the auditor's reporting behaviour could not be measured. In Belgium, management advisory services are pro-

¹² An interesting alternative way to measure client loss would be to take into account the size of clients lost/gained. However, the cost of manual collection of these data in Belgium is prohibitive.

¹³ The data of this study relate to the period 1992-1996. In that period, there were still six Big audit firms instead of the current Big 5 audit firms.

vided by separate legal entities that are not required to make these data available.

CONTROL AND INSTITUTIONAL VARIABLES

In addition to the incentive variables relating to the auditor's loss function, some control and institutional variables were included in this study in order to reduce the likelihood of correlated omitted variables. The choice of variables is supported by prior research on the auditor's going-concern opinion decision and institutional factors. The following variables were considered. The first variable is a bankruptcy dummy (BANKRUPT), which serves as an ex-post control for financial health. It can be expected that there is a strong correlation between bankruptcy and the likelihood of a going-concern uncertainty disclosure.

The second variable is the time lag between the closing of the fiscal year and the submission of the financial statements to the Belgian National Bank. In this respect, a distinction is made between a delay of the annual general meeting of shareholders (GMDELAY) and a submission lag (SUBMLAG)¹⁴ of the financial statements to the Belgian National Bank. Belgian Company Law requires that the annual general meeting of shareholders takes place within six months after the closing of the fiscal year. The maximum submission time of the financial statements to the Belgian National Bank is thirty days after the annual general meeting of shareholders. It can be expected that companies with financial difficulties tend to delay the holding of the annual general meeting of shareholders and the submission of the financial statements to the Belgian National Bank and are more likely to receive a going-concern uncertainty disclosure. A delay of the annual general meeting can be expected due to lengthy auditor-client negotiations that go with the disclosure of a going-concern uncertainty in the audit report. A submission lag can be expected since problem companies may want to defer potentially negative consequences

related to the public announcement of the receipt of an audit report disclosing a going-concern uncertainty.

The third variable is the location of the client company. A distinction is made between whether the company is located in Brussels (LOCB), Wallonia (LOCW) or Flanders (LOCF, region of reference). Given the fact that the probability of bankruptcy is the highest in Brussels, followed by Wallonia and Flanders,¹⁵ it could be expected that a competent auditor would take the economic condition of the country into account.

Finally, the institutional variable bad news in the annual report of the Board of Directors (BADNEWS) is included in the model. Belgian Company Law requires an auditor to refer in the audit report to the annual report of the Board of Directors by stating whether it contains all the statutory information and whether it is in accordance with the financial statements. It is expected that bad news in the annual report of the Board of Directors will increase the likelihood of a going-concern uncertainty disclosure in the audit report since it would reduce the conflict of interest between the auditor and the client's management.¹⁶

It is acknowledged that, notwithstanding these control and institutional variables, a potential omitted variable problem in the going-concern opinion model can never entirely be overcome. For example, the model does not control for persistence in audit reporting by including prior audit opinions. The data collection of prior audit opinions for all companies in our sample would have been prohibitively expensive.¹⁷

4.3. Research methodology

Given the special estimation problems related to binary dependent variables (Maddala, 1991), a logistic regression model was used to assess the incremental contribution of each incentive variable of interest while controlling for the variables described above. As mentioned, three choice-based samples were drawn with unequal population rates. The number of bankrupt companies is smaller than the number of financially stressed non-bankrupt companies, which is in turn smaller than the number of financially non-stressed non-bankrupt firms. Maddala (1991: 793) argues that if this choice-based sample is used to estimate a logit model, no weighting procedure is needed. The coefficients of the explanatory variables are not affected by the unequal sampling rates. It is only the constant term that is affected.

The model looks as follows:

$$GCUD = \beta_0 + \beta_1 LNFEED + \beta_2 CLIENTLOSS + \beta_3 B6NB6 + \beta_4 TENURE + \beta_5 MANDATE + \beta_6 BANKRUPT + \beta_7 GMDELAY + \beta_8 SUBMLAG + \beta_9 LOCB + \beta_{10} LOCW + \beta_{11} BADNEWS + \epsilon$$

¹⁴ A combination of the two variables, GMDELAY and SUBMLAG, into one LAG variable (lag between year-end and submission date) results in a significant positive regression coefficient of the LAG variable. The reason why I split the total lag into a GMDELAY and a SUBMLAG is to get more refined results. The results show that only the GMDELAY variable is significant, but not the SUBMLAG variable.

¹⁵ The bankruptcy ratio, defined as the number of bankruptcies divided by the number of establishments, is the highest in Brussels, on average 0.39 during the period 1991–1996, followed by Wallonia, on average 0.28 and Flanders, 0.22. The number of bankruptcies divided by the total number of companies follows the same pattern, ranging on average from 0.027 in Brussels during the period 1992–1996, to 0.020 in Wallonia and 0.017 in Flanders (calculations based on data provided by the NIS).

¹⁶ It is noted that the causal relationship is difficult to disentangle. However, legally the report of the Board of Directors should be issued prior to the auditor's report.

where:

<i>GCUD</i>	<i>Going-concern uncertainty disclosure in the audit report, binary variable (GCUD = 1, in case going-concern uncertainty is disclosed).</i>
<i>LNFEF</i>	<i>Natural logarithm of the firm audit fees for the client company, proxied by the sum of operational and financial revenues.</i>
<i>CLIENTLOSS</i>	<i>Number of clients lost or gained by the audit firm during the previous year scaled by the annual number of firm clients (loss = -; gain = +).</i>
<i>B6NB6</i>	<i>Big 6 auditor or non-Big 6 auditor, binary variable (B6NB6 = 1, in case of Big 6 auditor).</i>
<i>TENURE</i>	<i>Length of the auditor-client relationship in years.</i>
<i>MANDATE</i>	<i>Indicates in which year of his/her engagement period (mandate) the auditor is, binary variable (MANDATE = 1, in case auditor is in last year of his/her official engagement period).</i>
<i>BANKRUPT</i>	<i>Client company went bankrupt or survived, binary variable (BANKRUPT = 1, in case of bankruptcy).</i>
<i>GMDELAY</i>	<i>Number of months between the closing of the fiscal year and the date of the annual general meeting of shareholders.</i>
<i>SUBMLAG</i>	<i>Number of days between the date of the annual general meeting of shareholders and the date of submission of the financial statements to the Belgian National Bank.</i>

<i>LOCB</i>	<i>Location of client company in Brussels, binary variable (LOCB = 1, in case company is located in Brussels).</i>
<i>LOCW</i>	<i>Location of client company in Wallonia, binary variable (LOCW = 1, in case company is located in Wallonia).</i>
<i>BADNEWS</i>	<i>Bad news score based on bad news in the annual report of the Board of Directors (bad news is considered to be disclosure of: important negative events after closing of the fiscal year; circumstances which can negatively influence the development of the company; application of Article 103/104 of Belgian Company Law;¹⁸ other bad news).</i>

5. Results and analysis

5.1. Descriptive statistics

Table 2 presents summary descriptive statistics of the explanatory variables for the entire sample as well as for the sample of companies with and without a GCUD in the audit report.

Table 2 shows that companies with a going-concern uncertainty disclosure in the audit report generate significantly lower audit fees compared to companies without a going-concern uncertainty disclosure in the audit report. It is significantly more likely that companies without a going-concern uncertainty disclosure in the audit report were audited by an audit firm that recently lost audit clients. Big 6 audit firms disclose significantly more going-concern uncertainties in their audit reports compared with non-Big 6 audit firms. Going-concern uncertainty disclosure in the audit report occurs significantly more in the case of a relatively short auditor-client relationship. A significant difference was also found for the variable mandate. However, the direction of the relationship is opposite to our expectations.

With respect to the control variables, it can be seen that, as expected, companies with a going-concern uncertainty disclosure in the audit report have a bad financial condition, have significantly delayed their annual general meeting, are significantly more likely to be located in Brussels and Wallonia, and have significantly more bad news disclosed in the annual report of the Board of Directors. The only control variable that is not significant in the univariate analysis is a submission lag of the financial statements to the Belgian National Bank. Therefore, the SUBMLAG variable is dropped in the multivariate analysis.

¹⁷ In Belgium, audit opinions are not publicly available on CD-ROMS. They have to be bought as a hard copy from the National Bank.

¹⁸ Article (103, Alarmprocedure) states: 'If net assets are less than 50% of the subscribed capital, the Board of Directors is required to convene the members of the General Meeting, who must decide on the basis of the Board's reorganisation plans whether or not to continue the entity. The diagnosis should take into account the specific characteristics of the entity at the closing date of the financial year, as well as events between this closing date and the date on which the Boards of Directors approves the annual statements and submits them to the General Meeting'. Article (104) says that 'if net assets are below the minimal amount any interested party may appeal to the court to dissolve the company'.

Table 2
Descriptive statistics and univariate analysis by grouping variable GCUD (Going-Concern Uncertainty Disclosure) over the period 1992–1996

<i>A. Descriptive statistics</i>	<i>Mean</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Median</i>
LNFEED	11.92	0	16.57	12.21
CLIENTLOSS ¹	6.62	–100	100	11.11
B6NB6	0.26	0	1	0
TENURE	3.76	0	9	4
MANDATE	0.25	0	1	0
BANKRUPT	0.33	0	1	0
GMDELAY	5.42	1	17	5
SUBMLAG	45.87	1	334	31
LOCB	0.19	0	1	0
LOCW	0.16	0	1	0
LOCF	0.64	0	1	0
BADNEWS	0.97	0	6	1

¹ CLIENTLOSS: It is noted that in 22 cases of the 1176, the percentage of clients gained exceeded 100%. These cases were considered as outliers and the percentage of clients gained was set at 100% .

<i>B. Univariate analysis</i>	<i>GCUD sample Mean Rank (Sum of Ranks)</i>	<i>No GCUD sample Mean Rank (Sum of Ranks)</i>	<i>Mann-Whitney U (Asymptotic significance one-tailed)</i>
LNFEED	514.47 (101351) 25th percentile: 10.86 median: 11.93 75th percentile: 12.72	599.88 (583683) 25th percentile: 11.35 median: 12.24 75th percentile: 13.01	81848 (0.001)***
CLIENTLOSS	613.48 (117788) 25th percentile: –2.74 median: 2.22 75th percentile: 11.34	570.93 (549802) 25th percentile: –3.7 median: 2.1 75th percentile: 11.11	85636 (0.053)*
TENURE	490.66 (95188.5) 25th percentile: 2 median: 3 75th percentile: 4	598.54 (578191.5) 25th percentile: 3 median: 4 75th percentile: 5	76273.5 (0.000)***
GMDELAY	458.63 (90809) 25th percentile: 5 median: 6 75th percentile: 6	370.16 (216911) 25th percentile: 5 median: 5 75th percentile: 6	44920 (0.000)***
SUBMLAG	405.83 (80353) 25th percentile: 22.75 median: 35 75th percentile: 64.25	388 (227366) 25th percentile: 22 median: 30 75th percentile: 51	55375 (0.169)
BADNEWS	625.67 (91973) 25th percentile: 1 median: 2 75th percentile: 3	(281707) 392.90 25th percentile: 0 median: 1 75th percentile: 1	24304 (0.000)***

Table 2 (continued)

	<i>GCUD sample</i>	<i>No GCUD sample</i>	<i>Pearson χ^2 (Asymptotic significance one-tailed)</i>
B6NB6	B6: 30.1% NB6: 69.9%	B6: 25.3% NB6: 74.7%	1.874 (0.085) *
MANDATE	First years: 71.1% Last year: 28.9%	First years: 75.5% Last year: 24.5%	1.667 (0.098) *
LOCB	Brussels: 22.7% Not in Brussels: 77.3%	Brussels: 18.6% Not in Brussels: 81.4%	1.793 (0.090) *
LOCW	Wallonia: 22.2% Not in Wallonia: 77.8%	Wallonia: 15% Not in Wallonia: 85%	6.26 (0.006) ***
LOCF	Flanders: 57.1% Not in Flanders: 42.9%	Flanders: 66.6% Not in Flanders: 33.4%	6.521 (0.005) ***
BANKRUPT	Bankrupt: 73.2% Non-bankrupt: 26.8%	Bankrupt: 25.3% Non-bankrupt: 74.7%	170.557 (0.000) ***

***: $p < 1\%$; **: $p < 5\%$; *: $p < 10\%$

where:

<i>LNFE</i>	<i>Natural logarithm of the firm audit fees for the client company, proxied by the sum of operational and financial revenues.</i>
<i>CLIENTLOSS</i>	<i>Number of clients lost or gained by the audit firm during the previous year scaled by the annual number of firm clients (loss = -; gain = +).</i>
<i>B6NB6</i>	<i>Big 6 auditor or non-Big 6 auditor, binary variable (B6NB6 = 1, in case of Big 6 auditor).</i>
<i>TENURE</i>	<i>Length of the auditor-client relationship in years.</i>
<i>MANDATE</i>	<i>Indicates in which year of his/her engagement period (mandate) the auditor is, binary variable (MANDATE = 1, in case auditor is in last year of his/her official engagement period).</i>
<i>BANKRUPT</i>	<i>Client company went bankrupt or survived, binary variable (BANKRUPT = 1, in case of bankruptcy).</i>
<i>GMDELAY</i>	<i>Number of months between the closing of the fiscal year and the date of the annual general meeting of shareholders.</i>
<i>SUBMLAG</i>	<i>Number of days between the date of the annual general meeting of shareholders and the date of submission of the financial statements to the Belgian National Bank.</i>
<i>LOCB</i>	<i>Location of client company in Brussels, binary variable (LOCB = 1, in case company is located in Brussels).</i>
<i>LOCW</i>	<i>Location of client company in Wallonia, binary variable (LOCW = 1, in case company is located in Wallonia).</i>
<i>LOCF</i>	<i>Location of client company in Flanders, binary variable (LOCF = 1, in case company is located in Flanders).</i>
<i>BADNEWS</i>	<i>Bad news score based on bad news in the annual report of the Board of Directors (bad news is considered to be disclosure of: important negative events after closing of the fiscal year; circumstances which can negatively influence the development of the company; application of Article 103/104 of Belgian Company Law; other bad news).</i>

Table 3
Pearson Correlation matrix

	LNFEF	CLIENTLOSS	B6NB6	TENURE	MANDATE	BANKRUPT	GMDELAY	LOCB	LOCW	BADNEWS
LNFEF	1									
CLIENTLOSS	-0.019	1								
B6NB6	-0.062**	-0.045	1							
TENURE	0.104***	-0.071**	-0.025	1						
MANDATE	0.026	-0.072**	-0.055	0.014	1					
BANKRUPT	-0.026	-0.034	-0.128***	-0.199***	0.044	1				
GMDELAY	0.023	0.050	-0.001	-0.104**	0.091***	0.200***	1			
LOCB	-0.119***	0.062**	0.100***	-0.029	-0.015	0.011	0.010	1		
LOCW	0.017	0.028	-0.117***	-0.014	0.063**	0.070**	-0.015	-0.214***	1	
BADNEWS	0.111***	-0.051	0.038	-0.056	0.044	0.335***	0.114***	-0.013	0.043	1

***: $p < 1\%$; **: $p < 5\%$; *: $p < 10\%$

where:

LNFEF	Natural logarithm of the firm audit fees for the client company, proxied by the sum of operational and financial revenues.
CLIENTLOSS	Number of clients lost or gained by the audit firm during the previous year scaled by the annual number of firm clients (loss = -; gain = +).
B6NB6	Big 6 auditor or non-Big 6 auditor, binary variable (B6NB6 = 1, in case of Big 6 auditor).
TENURE	Length of the auditor-client relationship in years.
MANDATE	Indicates in which year of his/her engagement period (mandate) the auditor is, binary variable (MANDATE = 1, in case auditor is in last year of his/her official engagement period).
BANKRUPT	Client company went bankrupt or survived, binary variable (BANKRUPT = 1, in case of bankruptcy).
GMDELAY	Number of months between the closing of the fiscal year and the date of the annual general meeting of shareholders.
LOCB	Location of client company in Brussels, binary variable (LOCB = 1, in case company is located in Brussels).
LOCW	Location of client company in Wallonia, binary variable (LOCW = 1, in case company is located in Wallonia).
BADNEWS	Bad news score based on bad news in the annual report of the Board of Directors (bad news is considered to be disclosure of: important negative events after closing of the fiscal year; circumstances which can negatively influence the development of the company; application of Article 103/104 of Belgian Company Law; other bad news).

Table 3 presents the Pearson correlation matrix. As can be seen, the risk of bias due to strong correlations among the covariates is minimal.

5.2. Logistic regression analysis

The results of the logistic regression for the total sample are presented in Table 4. As can be seen the observations are well fit by the model, given the significant model's chi-square ($p < 0.0001$) and the high association of predicted probabilities with observed responses (85.1% correct.¹⁹)

As shown in Table 4, the following incentive variables relating to the auditor's loss function appear to be significant explanatory variables. First, higher audit fees tend to decrease the likelihood of a going-concern uncertainty disclosure in a significant way²⁰. Second, recent loss of audit clients appears to significantly moderate the willingness of the auditor to disclose going-concern uncertainty in the audit report. Big 6 auditors are not significantly more likely to disclose a going-concern uncertainty in the audit report. A subdivision of the total sample into bankrupt companies on the one hand, and non-bankrupt companies on the other hand, shows that the B6NB6 variable is not significant in either of the subsamples.²¹ The variables tenure and mandate are no longer significant when tested in a multivariate way.

The following control variables are significantly related to a going-concern uncertainty disclosure in the audit report: a bad financial condition of the client; a delay of the annual general meeting; a client company located in an economic weaker performing region; and bad news in the annual report of the Board of Directors.²²

6. Conclusions

The purpose of this study was to assess whether the auditor's decision to disclose going-concern uncertainty is influenced by economic incentives related to the auditor's loss function. In contrast to prior research performed in a highly litigious US business environment, this study was done in a limited litigious Continental European business environment, i.e. Belgium. Despite the low risk of litigation and the fact that most Belgian companies are privately held, various regulations have been put into effect to safeguard audit quality in Belgium. However, this study provides empirical evidence to support the contention that the auditor's going-concern opinion decision in Belgium is significantly associated with factors surrogating the perceived consequences of disclosing a going-concern uncertainty. Specifically, the results suggest that recent loss of audit clients appears to significantly moderate the auditor's going-concern opinion decision. Moreover, the results of the study suggest that higher audit fees decrease the willingness of the auditor to disclose going-con-

cern uncertainty. No evidence was found that the auditor's going-concern opinion decision is significantly influenced by the length of the auditor-client relationship,²³ year of mandate, and auditor type. This alleviates to some extent the concern that auditors may not act independently.

These results are to some extent different from the study of Louwers (1998), based on US data, in which no evidence was found for the fact that auditors' incentives play a role in the issuance of a going-concern modification. Indeed, none of the incentive variables related to the auditor's loss function was significant. A potential explanation for the difference in results could be that US auditors perceive the risk of litigation as higher than the potential losses of disclosing going-concern uncertainty. In other words, due to the high-litigious business environment in the US, litigation may be a dominant factor in the economic trade-off made by the auditor and consequently other auditors' incentives may not come into play. This latter statement would also be consistent with both theoretical (Magee and Tseng, 1990) and empirical (DeFond and Subramanyam, 1999) research.

In addition, this study showed that the auditor's going-concern opinion decision is significantly related to: a bad financial condition; the location of a client company; bad news in the annual report of the Board of Directors which tends to decrease the conflict of interest between the auditor and the client management; and a delay of the annual general meeting of shareholders which may suggest lengthy auditor-client negotiations and extensive auditor testing.

¹⁹ The prediction accuracy is based on a cut off value of 50%. A cut off value of 33% (since one third of the companies in the total sample went bankrupt) results in a similar prediction accuracy rate of the model: 83.5%.

²⁰ It is acknowledged that due to the absence of publicly available audit fee data, the audit fee proxy variable may seem less convincing. However, in our opinion, the fee result is not biased by merely capturing a client size effect, given that we control for the relation between client size and bankruptcy by including a bankruptcy dummy in the model. Therefore, we believe that the audit fee proxy does capture expected revenues and related independence concerns.

²¹ Also Gaeremynck and Willekens (2001) did not find a significant reporting difference between Big 6 and non-Big 6 auditors for Belgian companies for which financial difficulties were obvious and bankruptcy followed. However, they did find evidence that Big 6 auditors issue more non-clean audit reports when financial problems are less explicit and voluntary liquidation follows.

²² Following Hopwood et al. (1994), it was checked whether the results might be biased because of including both financially stressed and non-stressed firms. To this end, the same logistic regression analysis was run for the subsample of bankrupt companies and financially stressed non-bankrupt companies. The results remain the same.

²³ It is noted that Vanstraelen (2000) did find evidence that auditors in Belgium are less willing to qualify audit reports in general (not specifically going-concern qualifications) in case of long tenure.

Table 4
Logistic regression results for the period 1992–1996
Dependent variable: GCUD (Disclosure of going-concern problems = 1)
n = 865¹

<i>Variable</i>	<i>Parameter Estimate</i>	<i>Standard Error</i>	<i>Wald Chi-Square</i>	<i>Significance p <</i>
CONSTANT	−2.261	0.883	6.561	0.010**
LNFEF	−0.245	0.062	15.442	0.000***
CLIENTLOSS	0.010	0.004	6.763	0.009***
B6NB6	0.426	0.261	2.670	0.102
TENURE	−0.008	0.065	0.015	0.904
MANDATE	0.177	0.257	0.476	0.490
BANKRUPT	1.796	0.248	52.453	0.000***
GMDELAY	0.243	0.078	9.725	0.002***
LOCB	0.024	0.296	0.007	0.935
LOCW	0.490	0.290	2.866	0.090*
BADNEWS	0.753	0.102	54.062	0.000***

***: $p < 1\%$; **: $p < 5\%$; * : $p < 10\%$

−2 Log Likelihood: 530.187

Prediction accuracy: 85.1%

Pseudo R-square: 29.69%

Model chi-square: 223.890

Degrees of freedom: 10

Significance: 0.000

where:

<i>LNFEF</i>	<i>Natural logarithm of the firm audit fees for the client company, proxied by the sum of operational and financial revenues.</i>
<i>CLIENTLOSS</i>	<i>Number of clients lost or gained by the audit firm during the previous year scaled by the annual number of firm clients (loss = −; gain = +).</i>
<i>B6NB6</i>	<i>Big 6 auditor or non-Big 6 auditor, binary variable (B6NB6 = 1, in case of Big 6 auditor).</i>
<i>TENURE</i>	<i>Length of the auditor-client relationship in years.</i>
<i>MANDATE</i>	<i>Indicates in which year of his/her engagement period (mandate) the auditor is, binary variable (MANDATE = 1, in case auditor is in last year of his/her official engagement period).</i>
<i>BANKRUPT</i>	<i>Client company went bankrupt or survived, binary variable (BANKRUPT = 1, in case of bankruptcy).</i>
<i>GMDELAY</i>	<i>Number of months between the closing of the fiscal year and the date of the annual general meeting of shareholders.</i>
<i>LOCB</i>	<i>Location of client company in Brussels, binary variable (LOCB = 1, in case company is located in Brussels).</i>
<i>LOCW</i>	<i>Location of client company in Wallonia, binary variable (LOCW = 1, in case company is located in Wallonia).</i>
<i>BADNEWS</i>	<i>Bad news score based on bad news in the annual report of the Board of Directors (bad news is considered to be disclosure of: important negative events after closing of the fiscal year; circumstances which can negatively influence the development of the company; application of Article 103/104 of Belgian Company Law; other bad news).</i>

¹ The annual report of the Board of Directors was not available for all companies in the sample. For the bankrupt sample, the annual report of the Board of Directors was missing in 26.8% (105) of the cases, for the sample financially stressed firms in 30.6% (120) of the cases and for the sample of financially non-stressed firms in 21.9% (86) of the cases. Therefore, the number of observations in the logistic regression analysis reduces to 865.

The results of this study are subject to the following limitations. First, due to data unavailability, it was not possible to work with actual fee data. Secondly, there may be other incentive variables related to the auditor's loss function which are not captured by the model. Thirdly, a potential omitted variable problem in the going-concern opinion model can never entirely be overcome.

Further research could provide additional evidence on whether these results hold in other limited litigious business environments.

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Book reviews

Recording an Empire: an Accounting History of Imperial Chemical Industries Ltd 1926–1976. *Jeff Percy.* Institute of Chartered Accountants of Scotland, Glasgow, 2001. 400 pp. £15.

In the preface Jeff Percy, former deputy chief accountant of ICI, explains that this book was written during his retirement to satisfy his own curiosity about the antecedents of some of the more hallowed accounting procedures used by ICI. He offers an opening apologia for any omissions due to the company's routine destruction of documents and limitations in his own willpower (in a Scottish chartered accountant...surely not!). But this modestly priced book of some 400 pages instead provides a comprehensive and diligently written account of the challenges that ICI's accounting division faced over a period of 50 years.

The book covers 50 years from the date that Imperial Chemical Industries was formed, by the merger of the then four largest British chemical companies. This period, while avoiding difficulties of present-day confidentialities, nonetheless covers a period of extraordinary change – from the deflationary experiences of the inter-war period, the years of the Second World War and its aftermath, through to its conclusion in the high inflation of the mid-1970s.

It is the sort of book that only an 'insider' could have written, and the underlying theme of continuity in the face of change has been greatly informed by the author's understanding of the firm's structure and culture. The title is also an accurate reflection of the book's scope; it is not a business history and does not refer to any great breadth of secondary literature, but it does provide a lucidly written history of the nature of organisational response to accounting challenge, set against a useful introduction to the history of the company during this period. The 'Empire' in the title is a reference to both the size of the organisation, and to the arrangements of the inter-war chemicals cartel that allotted Europe to I. G. Farbenindustrie and Solvay et Cie and the US to du Pont, leaving ICI to supply the chemical needs of the UK and the British Empire.

The book contains innumerable insights. I particularly liked the candour of Sir Alfred Mond's explanation to the shareholders in 1928 of how

'the old idea of the heads of great businesses meeting each other with scowls and shaking their fists in each other's faces and trying to destroy each other's business may be very good on film', but was a mile away from the reality of their friendly relations with international competitors. Such a degree of cooperation did not, of course, extend to employees – patrician values meant the exclusion of wages and conditions of work from the agendas of the in-house works councils and the reluctant official recognition of unions only after the Second World War. It was also interesting that the contrast on the management side between Brunner Mond's deliberately fostered public school atmosphere and the 'more workaday attitudes' that prevailed in their merger partners, Nobel Industries, United Alkali and British Dyestuffs, took more than 30 years and a world war to 'really wear off'.

The main value of the book lies, however, in the extensive material it provides on the central accounting dilemmas of the period, ranging from mergers to the effects of inflation on depreciation charges and asset revaluation policies. The account of the meetings with the auditors in 1975 over deferred taxation and the questioning of how large the deferred tax balance had to be before the auditors would see it as misleading was interesting, although this of course reads rather differently in view of the subsequent decline in inflation rates and the fiasco of the partial provision stance of the ASB. The contrast between the changes required by legislation and accounting standards and the astonishingly durable nature of ICI's basic internal systems, where E. G. Minto, pivotal to their design in 1927, 'would have met them as old friends in 1976', is also well brought out.

By way of criticism, the foreword, as listed on the contents page, seems to have disappeared and the book would have benefited from an index, although the careful organisation and detailed listing of the contents provides compensation for this.

In summary, this is a substantial and well-written book. It is not easy reading but it does provide a unique, candid, insider's view on the accounting history of one of the most significant British companies of the 20th century. It offers invaluable information to those with an interest in its subject matter.

University of Essex

A. J. Arnold

Attitudes of UK managers to risk and uncertainty. *Helliar, Lonie, Power and Sinclair.* ICAS, 2001.

The research carried out for this book is described as being different from normal studies into risk management research because it 'adopts a different perspective and concentrates on the attitudes to risk of employees within firms'. These 'attitudes' are explored in a decision-making context. The book makes a useful contribution in analysing a number of important areas involved in the decision-making process, and how risk and uncertainty influence the choice made (by the manager).

The main research questions addressed by the study were:

- What are UK managers' perceptions of risk and does this perception vary between managers?
- Do UK managers concentrate on avoiding losses in risky situations?
- What is the impact of personal and organisational characteristics on attitudes to risk?
- Do decision characteristics affect attitudes to risk?
- Do managers in failing companies exhibit different attitudes to risk and behave differently from other managers in risky situations?
- Do companies attempt to manage risk and, if so, what strategies are employed for this purpose?
- Do external stakeholder groups exert an influence on companies' attitudes to risk?

After describing the research questions, the research methodology (both qualitative and quantitative approaches were used) and literature review, the subsequent chapters take each of the research questions and highlight the results of the data analysis and the implications for the decision-making process. The reader will immediately note that a broad cross-section of UK managers (by function) within a number of different industries were selected to participate in the research project.

The analysis begins by examining what risks appear to be important to managers when they are making decisions. The short answer is: 'it depends'. The dependency is linked to the functional position of the manager and, as explained in later chapters, other items have to be factored in such as the managers own risk perceptions and the organisational characteristics of the business in which he/she operates. The range of possible risks is endless but, in general, they may be broken down into finance, personnel, strategic and everything else.

Perhaps the most interesting part of the book is where the personal and organisational characteristics are examined. Awareness of risk varies across business sectors according to the authors, with managers in mature industries having a different attitude to risk than managers in faster growing sectors. Embedding effective risk management into the culture of the organisation appears to be an im-

portant facet of making managers more risk aware, as opposed to risk averse.

Needless to say, the attitude to risk will vary depending upon the nature of the decision being made. The authors discuss this part of their research concluding that managers' decisions were not always 'optimal from a decision theory perspective', probably resulting from the bias that they brought to bear on the situation. Other areas covered by the authors are an analysis of attitudes to risk in failing businesses, the generic strategies employed for controlling risks in a particular decision, and the external influences that managers consider when making a risk decision. These combine with the other areas researched to provide an interesting cocktail of ingredients within which managers consider risk and take decisions.

This book provides a useful contribution to the literature on the broad subject of risk. Under each of the research questions posed, the researchers provide 10 recommendations designed to improve the decision-making of managers and which according to the authors, 'should change the way in which the notion of risk is taught'. The specific focus in the book is on the decision-making process, but given that managers have to make decisions every day in a business environment, the authors can be applauded for providing some interesting insights and useful recommendations on what can be done to improve the attitudes of managers – and for that matter directors, to risk and uncertainty.

As the reader of many studies of risk and uncertainty, it was refreshing to read something that has a very practical focus. As with any piece of research it is possible to be critical of some aspect of the study but, to my mind, that would be unfair and I for one have no hesitation in recommending the book, particularly to practitioners.

Henley Management College

Roger Mills

The professional accountancy bodies and the provision of education and training in relation to environmental issues. *Rob Gray and David Collison with John French, Ken McPhail and Lorna Stevenson.* The Institute of Chartered Accountants of Scotland (ICAS), Edinburgh, 2001. xv + 220pp.

Setting out to address the apparently simple question of 'What do accountants need to know about the environment', this research project ends up – and quite necessarily I might add – traversing all manner of aspects of accounting education and the accounting profession more generally. One is gripped by the sense in which the particular of environment could have been substituted by other issues requiring major innovation and change in education, practice and the profession, and yet revealed a similarly disturbing general analysis of

accounting education and the profession. It is possible to reflect on the inflation accounting debate that raged during the 1970s between educators, practitioners and the profession, and on the increasing importance of the debate over accounting for human capital and intangibles. The debate over inflation accounting cooled, if not became extinguished completely, but not because it was actively resolved. Rather, the climate changed. The debate over intangibles has continued for 30 or more years and seems no closer to resolution.

If the authors are to be believed, the debate over 'environmental issues', while in its infancy, is likely to be even more problematic. Moreover, the likelihood of it going away, as did inflation, seems remote. In other words, then, the challenge and problem of accountants dealing with the matter of environmental issues is something symptomatic of more fundamental root causes, and the monograph spends some considerable energy trying to come to terms with what these are. As the authors suggest (p.106), their question became increasingly complicated as subsequent layers of the onion were peeled. 'Environmental issues' turn out to reveal demanding questions of sustainability and social justice. And these raise major questions about economic and financial organisation. 'Educational issues' reveal problems of vocational versus 'transcendent' educational experiences and objectives, and then reveal complex psychological and institutional issues facing academic accountants. 'Professional issues' reveal tensions about the nature of the public interest, and the nature of accounting training and recruitment.

This complexity emerges from an extensive, and what must have been quite exhausting, series of empirical forays (using questionnaires, semi-structured interviews, and reviews of other empirical findings) with non-accounting educators, accounting educators, undergraduate accounting students, heads of departments, recruiters of graduates, and members of several professional accounting bodies. The issues raised by such investigations are fundamental and wide-ranging, and it is impossible to do them all justice in this short review. Indeed, the authors themselves are fully aware that they have failed to do them all justice, and many of the issues raised need, and could easily sustain, deeper investigation. This is indeed a project that has raised far more issues than it has provided answers, and for that we should be thankful. This study investigates – *inter alia* – the public versus client-serving role of the profession; degree accreditation; pre-entry requirements; professional exams; environmental issues in the profession; relevant degrees; recruitment requirements; and education versus training. I'll touch on three key-related issues to emerge from the monograph: inertia in university (accounting) education; the

concept of sustainability; and the role of the relevant degree and accounting-based education.

Chapters 4 and 5 provide an overview of the somewhat impoverished state of university accounting education more generally (Chapter 4), before going on to examine, and update, the current state of (social and) environmental accounting education more specifically (Chapter 5). On a general note, the authors argue that what is wrong with accounting education, and in particular its apparent inability to foster innovation, is...everything. They suggest at fault lie:

'...teachers' interests, expectations, motivations and training; the relationship between teaching and research; the current university environment; students' characters, abilities, motivations and expectations; recruitment practices; the views and activities of practitioners; the professional syllabi and the examination processes; the pronouncements of the professions; the tensions between academe and practice; and, *perhaps most importantly of all*, the very nature of accounting as it is currently understood and practised' (p.72, emphasis in original).

Are our authors being a touch precious here? If I hadn't been involved in accounting education research that came to largely similar conclusions, I might think so. But in seeking to uncover the potential impediments to the adoption of student-centred learning approaches in accounting education – something our profession was actively backing – we, too, identified a complex mix of student, teacher, institutional and professional impediments (see Adler et al., 2000). Students, for example, typically resist messy non-black-and-white issues that require high levels of preparation and critical thought; consequently, many educators, due to pressures of research, student-evaluations of teaching, promotion, etc, typically caved in and served up an easy-to-follow menu from a standard text. Only educators with an individual and deep sense of commitment were found to be willing to overcome these impediments. The research monograph, too, shows that environmental issues are being fully integrated in accounting education in only a few full courses, and mostly by those who actively research in the field. Despite their attempts, our authors uncover no explicit reasons from educators for not teaching environmental issues. Instead, and thoroughly challenging for those seeking change, a powerful mix of factors are found to produce a level of inertia that slows and stalls any sort of widespread development in accounting education.

What sort of changes might (or should) be sought by the accountancy profession and education in terms of environmental issues is also something the monograph spends a good deal of time

addressing (Chapter 2). And the answers to such issues, as are made clear, are likely to be inextricably tied to one's concept of what the accounting profession is about (Chapters 6 and 7), and how one views the environmental crisis (Chapter 2). Is it a case of introducing new understandings about pollution control, recycling, contingent liabilities, etc, because these are the kinds of things being sought by client companies, and that's what the purpose of the accountancy profession is: satisfying the demands of clients? Is it a case of introducing fundamental challenges to accounting (and capitalistic economic organisation more generally) based on notions of 'sustainability' because one considers the purpose of the accounting profession is to serve the public interest, even when this is known to create tensions among its client base? Or is it a case of doing all these things? These are the sorts of issues about which the report seeks to stimulate debate.

Most accountants, as the monograph reveals, have barely begun to dip their toes in the water of environmental issues, and for this reason the monograph deliberately steers clear of the detailed debate about the deeper and more radical aspects of accounting for sustainability. Nonetheless, one gets a clear sense that the authors themselves favour including the more radical end of the spectrum and that some form of accounting for sustainability is worth pursuing. While sustainability is a contested and ambiguous concept, lying at its heart is the notion that economic development must remain within the carrying capacity of the atmosphere, rivers, lakes and other essential resources.

Norton (1989) argues that ecosystems are stressed by unrestrained economic exploitation, and this 'amounts in practice to an assertion that there are certain pre-emptive *constraints* placed on the pursuit of economic criteria for resource use' (Norton, 1989, p.145). Norton favours a two-stage approach. First, in order to fulfil our duties to future generations, ecological information on ecosystems needs to determine constraints. Second, economic considerations are used to determine which acceptable modes of exploitation will provide for human well-being in the present.

Following Norton, one realises that sustainability not only poses problems for accounting, but accounting as conventionally practised, and perhaps even as modified as our authors would wish, poses serious difficulties for sustainability. Reporting and accountability places at its centre the "economic organisation" (the entity concept) and assumes it will continue indefinitely (the going concern concept). Even so-called triple-bottom-line reports focus on the organisation and its behaviour, and not on the natural entities that provide the resources (e.g., water, air, land) in the first place. In New Zealand recently, and in the light of in-

creasing scientific evidence that Lake Taupo (about the size of the Kingdom of Fife, Scotland) is being irrevocably damaged by surrounding land management practices (e.g., fertiliser run-off), community-based decisions to cease activity, including retiring farms, seem increasingly likely to be taken. Is organisation-based triple-bottom-line reporting necessary for this kind of initiative? Would such reporting have helped or hindered this kind of decision-making? I wonder. It doesn't matter that every profitable organisation in a particular region is operating state-of-the-art environmental management practices and reporting them when there are simply too many of them. And is there not a danger that organisational-based accounting and reporting, even when well expanded with social and environmental impact information, could actually serve to further privilege and strengthen the position of the economic organisation in times of increasing conflict over scarce ecosystem resources? Indeed, one might cynically suspect this is why numerous organisations are moving relatively quickly to adopt such approaches.

If (social and environmental) accountants are to serve the 'public interest' as this research monograph encourages, then it may also be time to shift the level of focus to new entities: away from accounting for organisations to accounting *for* ecosystems and to accounting *for* communities. While these specific issues are ones the current monograph only begins to touch upon, they clearly illustrate the authors' more general point that sustainability poses some absolutely fundamental challenges to accounting and vice-versa.

With inertia as the 'problem' in accounting education our authors are acutely aware that if universities ought to be providing a view of this 'bigger picture', and they certainly believe they should, then a way/ways must be found to educate the educators to deliver such an education. Despite identifying the crux issue as educating the educators, the report (Chapter 8) focuses on what sort of mechanisms could be used to deliver the bigger picture, and what sort of lead the professional bodies need to play to establish such mechanisms. Favoured mechanisms are the (presumably one-year) full-time post-graduate pre-training diploma for non-accounting graduates, and a very much revamped relevant degree. What clearly emerged from the field research, and numerous hard-hitting quotes back this up, was the fact that the relevant degree was largely failing to deliver in all manner of respects; not only in terms of environmental education, but also in terms of producing critical, thinking and reflective students. Many practitioners suggested they preferred non-relevant graduates. Also evident from the report, however, was a certain level of disdain on the part of the authors for the ICAEW's practice of recruiting as much as

80% of its members without relevant degrees. In essence, one senses the authors' preferred mechanism to deliver the bigger picture is the re-vamped relevant degree.

Whether an accounting-based (presumably three-year) university degree is the best way forward in delivering the bigger picture is a matter for debate. To overcome perceptions that its accounting graduates lacked critical thinking skills and a well-rounded education, the New Zealand accounting profession moved to a required four-year, broader-based accounting degree (it doesn't permit non-accounting graduates) that requires a component (about a third) of liberal arts and sciences. While none of the arts and science papers are specified in topics like (say) ethics, society or environment, to achieve our authors' aims, they could be. In New Zealand's case it was realised that generating a broader education required students becoming exposed to non-accounting (indeed, non-business) tertiary-based educators. Nonetheless, several things can be noted about this approach.

First, in a four-year programme, students rarely take their arts and science topics beyond an introductory and rudimentary level, unless, of course, they undertake a double-degree (e.g., arts and commerce, science and commerce, or, quite popular, law and commerce) over five years. Consequently, one wonders how much could be achieved in a re-vamped three-year relevant degree.

Second, the basis for New Zealand's approach was to ensure students were exposed to non-accounting educators. Our authors' recommendations are unclear that they are seeking the same.

Third, New Zealand's approach contains a presumption that *all* graduates require largely the same broader education, and this focus on the level of an individual's education also underpins our authors' approach. When one considers the issue at the level of the profession, however, it seems there is little difference between a profession composed of largely similar members each with a broader-based relevant degree, and one composed of a

portfolio of non-accounting based graduates. Or is there? Are we better off with a profession that contains a few that know a lot about (say) ethics, religion, environmental science, planning, ecosystems and so on because this was their degree, or are we better off with a profession that contains many who know a little about these things? More importantly, under which of these models is the public interest better served? While there is merit in a broader-based and much revamped relevant degree, especially one that lasts four years, I wouldn't be in a hurry to ditch the non-accounting specialists. Indeed, it would be interesting to know just what proportion of the ICAEW's membership, for example, is made up from graduates that have received a university-based training in social and environmental issues.

This challenging, and at times hard-hitting, monograph is an essential read for all those concerned with the future education of accountants and the role of the accountancy profession more generally as well as those who have a keen interest in seeing environmental issues move up the education and professional agendas. It contains a veritable goldmine of further research ideas for those interested in pursuing educational research opportunities or understanding more about the role of the accounting profession. Most importantly, it provides the basis for debate about the role of the profession and university education in relation to environmental issues. It comes very highly recommended.

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The beginnings of accounting for capital consumption: disclosure practices in the British railway industry, 1830-55

A. J. Arnold and S. McCartney*

Abstract—Accounting for capital consumption has been one of the most vexed issues in the history of financial reporting. The early railway companies, whose ability to exploit the commercial opportunities available to them required unprecedented levels of capital expenditure, provided the first real arena for the development of possible solutions to the problem. Although accounting practices in the industry were subject to little regulation, some writers have asserted the existence of regularities in depreciation and replacement accounting practices (possibly driven by economic self-interest), although the evidential basis for these assertions has been slight. This paper provides the first assessment of the capital consumption accounting practices of companies in the railway industry, and of their regularities and patterns of change during the period 1830-55, to be derived from a substantial empirical base.

1. Introduction

Depreciation has been described as a 'key element for determining a firm's net income, the net value of its assets, and for the measured rate of return on a firm's assets' (Peles, 1990: 309) and has become a widespread practice recommended by accounting standards. The use of the concept had been recognised in 17th century commercial records (Mason, 1933: 209) but, even in the 19th century, it was not a widely practised form of accounting for capital consumption, i.e. the cost of using up fixed assets. Replacement accounting, in which the initial cost of acquisition of a fixed asset is charged to capital, but subsequent replacements of that asset are charged to revenue, was far more popular. Even at the end of that century, 'the view that depreciation by law need not be charged on fixed assets was firmly established' (Morris, 1986: 71), although the practice did become far more widespread during the 20th century. In recent times, one leading academic has described the choice of a defensible method of depreciation as 'one of the most intractable problems of accruals accounting' (Grinyer, 1987: 43) and another has published a text in virtual celebration of a 'continuing debate over depreciation, capital and income' that has lasted more than 100 years (Brief, 1993).

Although capital consumption had been ac-

counted for to some extent in early times, the move towards industrialisation 'brought the question more sharply into focus ... [although] it was the early years of the railway age which saw the matter given more careful attention' (Edwards and Boyns, 1994: 1,177). Each of the canal companies typically owned a single permanent asset but railway companies spent vast amounts of money on a far wider range of capital assets, of varying degrees of permanence. The forms of accounting that had served the canal companies satisfactorily were not well suited to the position of the railways; this inadequacy prompted a lively and public debate.

Before the passing of the Limited Liability Act of 1855, companies could only obtain the benefits of limited liability by application to the Crown or Parliament and the willingness of the latter to sanction private railway Acts gave the industry a privileged access to investment monies. The successful opening of the Liverpool and Manchester Railway in 1830 provided its own impetus and helped to make the industry central to the growth patterns of the British economy in the middle years of the century.¹ The railway companies quickly became the largest businesses of their time and, just as they learnt from the practices of the canal companies, so it is likely that many of the manufacturing and commercial companies that became limited liability companies by simple registration from 1855 would have looked to the leading railway companies as an exemplar of best practice in the area of fixed asset accounting.

*The authors are at the University of Essex. They gratefully acknowledge the support of the ESRC by means of grant R000222974. Correspondence should be addressed to Professor A. J. Arnold, Department of Accounting, Finance and Management, University of Essex, Wivenhoe House, Colchester, Essex CO4 3SQ. Tel: (01206) 872730; Fax: (01206) 873429; E-mail: arna@essex.ac.uk

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¹ In 1845-9, railway construction absorbed about 4.5% of GNP (Gourvish, 1980). By 1850 some 5,000 miles of line were in operation.

The railways were not, however, heavily regulated in return for their privileges. The early Acts typically made only the most rudimentary references to financial matters, and the provisions of the Companies Clauses Consolidation Act (CCCA) of 1845, which then applied, unless specifically varied, to all newly established statutory companies, required only that 'full and true Accounts to be kept of all Sums of Money received or expended on account of the Company,' the making up of an 'exact Balance Sheet' and the provision of a 'distinct view of the Profit or Loss which shall have arisen on the Transactions of the Company in the course of the preceding Half Year' (CCCA, 1845: sections 115–16).

The Act said little about how this 'distinct view' was to be determined, beyond stipulating in general terms that no dividend was to be paid which reduced the capital (CCCA, 1845: sections 121, 123). The directors were empowered, but not required, to '... set aside [from profits] such Sum as they may think proper to meet contingencies or for enlarging, repairing or improving the Works connected with the Undertaking, or any part thereof, and may divide the balance among the Shareholders' (CCCA, 1845: section 122).

Despite the lack of regulation, some writers have asserted the existence of regularities in the depreciation and replacement accounting practices of the early railway companies (perhaps driven by economic self-interest), although the evidential basis for these assertions has been slight.

The intention of this paper is to assess the depreciation and other capital consumption accounting practices of companies in the railway industry, their regularities and patterns of change during the critical early phase of railway development, 1830–55, basing this upon an analysis of the published half-yearly reports (and in some cases, other archival materials) of a substantial set of companies in the industry.²

The next sections of the paper discuss the relevant literature on the development of depreciation and replacement accounting practices, explain the research objectives and methodology used in this paper and then set out the main results, before turning to a discussion of the results and the setting out of some conclusions.

² Prior to 1830, only the Stockton and Darlington Railway had opened and, during this period, the company did not make any charges for capital consumption. The published accounts of companies controlled by George Hudson during the 1840s were allegedly misleading and the paper accordingly looked to the Committee of Inquiry reports of the companies concerned for clarification of the profits concerned. The dates 1830 and 1855 were selected because the Liverpool and Manchester line opened in 1830 and, by 1855, the passing of the Limited Liability Act allowed companies in general to obtain the benefits of limited liability by simple registration, rather than by application to the Crown or Parliament.

2. The relevant literature

The early railway companies required unprecedented amounts of capital: the London and North Western Railway, for example, was the largest business enterprise in the world in the 1840s and 1850s. The railways were 'the first business investment financed by the general public on a large scale' (Edwards, 1986a: 252) and so it is not surprising that some writers have credited them with a pioneering role in the development of financial reporting practice. Thus Geoffrey Lee argues that 'the dominant influence on early- and mid-Victorian accounting ... was the development of the railway network' (Lee, 1975: 20) and Tom Lee similarly states that 'the foundations of the present system of company financial reporting can be seen in the developments which took place in the railway boom between 1830 and 1870' (Lee, 1979: 17).

Further, the extremely high levels of capital they needed meant it was the railways that were 'obliged to tackle the new problem of valuing long-lived assets for inclusion in published accounting statements' (Edwards, 1989: 113). Edwards and Boyns argue that:

'...[B]y the early 1800s it was by no means uncommon for companies, particularly those involved in textiles and metal manufacturing, to attempt to spread the cost of a fixed asset over its expected working life. However, it was the early years of the railway age which saw the matter given more careful attention and, during the 1840s, a number of companies charged depreciation ...' (1994: 1,177, fn. 10).

Other writers have also seen the railways as the industry in which the issue of depreciation, at least of plant and equipment, was first confronted (e.g. see Horn, 1968: 619). In a largely unregulated era, accounting practices (and disclosure levels) inevitably varied from company to company (see Monteagle Committee Third Report, 1849: v; Parker, 1984: 70; also Glynn, 1984: 112–3 and Bryer, 1991: 460) and over time (see McCartney and Arnold, forthcoming). Despite the lack of legislative influence, several writers have claimed that there were nonetheless substantial regularities in the forms of accounting for fixed assets, including the approaches to the charging of depreciation, and that these regularities were driven largely by the underlying economic state of the industry.

Pollins has argued that, when numerous lines opened in the late 1830s and early 1840s, many of the companies concerned began to depreciate their rolling stock. 'During the Mania, [however], and for a few years after it, accounting for depreciation seems to have been dropped by some companies, presumably in order that the revenue account should be relieved of charges so that dividend rates

could be more easily maintained. When the companies settled down again after the excesses of the Mania they once more recognised the need to allow for depreciation in the accounts' (Pollins, 1956: 347), only now the focus of attention was on the permanent way. Pollins does not quantify the extent to which depreciation accounting was adopted by railway companies but his wording, as in the statement that there were 'some companies which did not include any provision for depreciation in their accounts' (1956: 345), implies that this was majority practice before the Mania.

Geoffrey Lee identifies similar changes in the depreciation practices of railway companies. During the 1830s, 'many companies provided depreciation on rolling stock, as a half-yearly percentage on cost. Others adopted the "industrial practice" of revaluing it at each half-year-end ... [although] during the Mania of the 1840s, however, depreciation charges often ceased. After 1847 several companies reverted to depreciation of rolling stock, and sometimes of the permanent way. In the 1850s, however ... rather than increase appropriations in face of falling profit margins, very many managements abandoned systematic depreciation accounting' (Lee, 1975: 23).

Edwards argues that the early railway companies responded to a crisis in shareholder confidence in the second half of the 1840s, consequent upon the collapse of the railway Mania of 1845–7, not only by providing far more information than previously but also by changing the conceptual basis of the reporting system, from a largely cash-based to a more fully accruals-based approach, with obvious implications for depreciation practices (Edwards, 1985; 1989: 168). Thus, before the Mania, 'it was quite common practice to make some provision for the depreciation of rolling stock,' although this policy was abandoned during the Mania, a change that Edwards also saw as driven by a desire to maintain dividends (1986a: 255). He also suggests that the London and North Western was (from 1847) probably the first company to establish a 'depreciation fund', quite separate from the rest of the business, for the renewal of the permanent way (1986a: 253). Again according to Edwards and Boyns (1994: 1,177), this became the 'favoured approach' of companies that chose to depreciate the permanent way in the late 1840s and early 1850s, although Edwards notes that these companies 'soon [i.e. in the 1850s] abandoned the practice in favour of charging current expenditure on renewals and maintenance against revenue' (1986a: 253–4).

A rather different perspective is provided by Bryer, whose 'swindle hypothesis' asserts, *inter alia*, that railway companies overstated profitability during the Mania, and then understated profitability after it, largely by means of changes in

depreciation policy. He argues that in the early 1840s 'depreciation accounting [of rolling stock] was the *modal*, if not necessarily the *mean*, practice', that it was abandoned during the Mania, recommenced afterwards but was then 'rapidly ousted by replacement accounting' (Bryer, 1991: 449, 473).

Finally, Brief suggests that railway company depreciation practices had a more general importance and argues that the dominant practice of replacement accounting in the railway industry during the 19th century produced a systematic tendency to under-represent the true cost of capital consumption, leading to 'accounting error', enhanced profits and an unjustified encouragement to further investment. *The Railway Times* in 1841 indicated the concerns of the time when it warned that some companies were 'running out their perishable stock', leading to excessive dividends and 'leaving a succeeding set of proprietors to make up from their income the replacing of exhausted stock' (Brief, 1965: 16). In an analysis of the economic effects of replacement accounting, May concluded that if the accounts of early US railways had contained a proper depreciation charge, the construction of much of the network would not have taken place when it did (May, 1936, cited by Brief, 1965: 19–20). Brief also echoes Pollins in arguing that the 'adoption of depreciation accounts from the late forties was a reaction to the scandals of the mid-forties ... [but] in the fifties and sixties ... companies found their past allocations to depreciation were inadequate' and adopted replacement accounting (Brief, 1965: 17; 1966: 5).

The ways in which railway companies recognised the cost attaching to fixed asset ownership changed as technical developments took place. These innovations affected perceptions of the nature and extent of the problem and consequently influenced the nature of the accounting response. In the first place, the early railway age, 1830–50, was essentially an age of construction, in which the employment generated by railway building dwarfed that created by railway operation and in which annual gross capital formation exceeded annual gross revenue (Gourvish, 1980: 20).

In their construction phase, the major expenditures of the railway companies were on laying out the route and building embankments, cuttings and tunnels, which were seen as having an almost inexhaustible existence. Moreover, in this period the early railway companies looked to accounting arrangements that had worked satisfactorily in the canal industry, where firms had also typically been formed to undertake defined public works under enabling Acts of Parliament. Until the capital project became operational, all the expenditures could be recorded in the capital account, which functioned as a stewardship document showing the re-

ceipts from long-term capital and the actual expenditures on the approved capital project (Edwards, 1986a: 259; Parker, 1992: 102; Lisle, 1899: 79; Dicksee, 1892: 118). Under this approach, the precursor of the double account system, debits to the capital account were included as expenditures, not as assets and the capital account gave no indication of the 'actual intrinsic value' of the assets and provided no mechanism for writing off any of the constituent items, so that even preliminary expenses (which in the case of railway companies could include very substantial Parliamentary expenses) and expired assets were bound to remain in the account (Jenkinson, 1910: 52; Brennan 1919: 512).

The system had worked satisfactorily in the case of canal companies, typically owning a single, permanent asset without which the business could not function, but was less suited to the railways for two reasons; firstly because recurrent construction booms led to numerous additional branch and extension lines that precluded the closure of the capital account and secondly because in most cases the railway companies not only owned the 'permanent way' but then also carried out the operating of it, which required them to own a wide range of operating assets of varying degrees of permanence. At the point at which operations began, the capital account clearly needed to be supplemented by a statement of operating gains and losses and, arguably, by a general balance sheet detailing the holdings of less permanent assets.

By the early 1840s, with more lines open to traffic, improvements were also made in engine design and power levels, enabling locomotives to haul much heavier goods trains. Until the mid-1840s, it had been generally assumed within the industry that the 'permanent way' itself had an almost infinite useful life, but the changes in engine specification meant instead that it became accepted that the effective life of the line was finite. Captain Mark Huish, general manager of the London and North Western Railway, convinced many that 20 years was a reasonable estimate of the potential life of the track (Gourvish, 1970: 49), an estimate that did a good deal to bring the permanent way within the scope of depreciation deliberations that had previously been largely confined to rolling stock (Pollins, 1956: 343–4).

As far as the accounting treatments of fixed asset expenditures were concerned, clearly a choice had to be made between anticipating and equalising (in an approximate way) the eventual cost of replacement of the fixed assets that were seen as less than permanent, or waiting for the replacement charge to emerge, to then charge it against the revenues of the year concerned. It might appear as though this choice could be a simple function of the degree of asset permanence, but Huish thought differently.

He felt that the early railways, in common with other businesses of the time, lacked a uniform, scientific approach and, as a result, were as likely to omit to 'provide for an inevitable liability' as to produce an 'exaggerated recognition of the problem'. He argued that:

'...[T]he question with which Railway men have to deal is not DEPRECIATION, but DETERIORATION. The former has reference to money value; the latter to working value, or condition. A very little reflection will satisfy any one, that the former is a matter of small moment to a Railway proprietor, while the latter is the test of the productive value of his property' (Huish, 1849 reproduced in Edwards, 1986b: 202).

The discussions of the shareholders and managers of the early railway companies of alternative approaches to the 'depreciation issue' were often both challenging and thorough and Huish, for example, was well aware of the need to adopt a solution that was equitable in the 'peculiar position' of the railway company that had a 'perpetual duration' yet was also a 'fluctuating body, incessantly parting with its constituent members and receiving new partners' (Huish, 1849 reproduced in Edwards, 1986b: 208). His own preferred way of doing 'full justice' to the various sets of proprietors was to provide, by way of an overt depreciation fund, to meet the anticipated cost of replacing the permanent way, because this deteriorated slowly and equally and thus threatened to produce 'a sudden cost burden,' unlike the far more rapid deterioration in the condition of rolling stock, much of which 'could be systematically renewed by current repairs or gradual replacement' (Gourvish, 1970: 49). Not all managers were convinced, however, and many continued to resist the necessity of making 'anticipatory' depreciation charges, provided the fixed assets were properly looked after and that the costs of doing so were properly charged against revenue (Edwards, 1986a: 252).

3. Research objectives and methodology

In 1854, the Board of Trade began to require reasonably full returns of financial data from companies in the railway industry, which were of considerable importance to the national economy but, prior to that date, reliable data on the performance of railway companies are limited.

In the earliest period, prior to 1837, when the success of the Liverpool and Manchester line began to prompt much higher levels of investment in the industry, data on even the amounts of capital raised by the various railway companies were 'extremely scattered' and accordingly unreliable.³

³ Simmons and Biddle, 1997, p. 311; Reed, 1975, pp. 32–3.

As a result, information on the composition of the industry was not readily available, although the one definitive source that was available, the various Acts of Parliament that established the individual railway companies, did enable the total set of companies in the (locomotive railway) industry in each year, and their authorised capitals, to be defined.⁴ This meant that a search could be carried out for the surviving accounting statements of the companies concerned (leaving aside the smallest, with authorised capitals of less than £50,000), for which purpose the substantial RAIL holdings at the PRO were invaluable. In many cases, the records had not survived, although in the case of the larger, more important companies, most of the relevant financial reports were still in existence, across the period 1830–55.

In the period 1837–55, however, there were rising levels of investment in the industry, there was some information available about aggregated amounts of capital raised by the various railway companies and the financial reports of the companies concerned had better rates of survival. The composition of the industry could now be defined in terms of its paid-up share capital (which provides a more precise measure than authorised capital of investment levels in the industry), using the series in Reed for 1837–42, a Report of the House of Lords covering 1843–47 and the annual Board of Trade Returns for 1848–55.⁵ The set of companies for which financial reports could be found included most of the major railway companies and could be seen to cover 70.9% of the annual amounts of paid-up share capital in the industry in the period 1837–55.⁶

The data set, as defined above, was then scrutinised for evidence of capital consumption charges against revenue during the period 1830–55, so that the incidence and significance of such charges and their patterns and variations over time could be identified. All apparent capital consumption costs charged against operating revenues were included, however described, in order to identify the economic effects of such charges in a consistent manner.

Moreover, although the ways in which the capital charges were described and treated may not impact on purely quantitative or economic measures, they can be highly revealing of the intentions of the companies concerned. In order to focus on the more complex, qualitative issues involved in the process of accounting for capital consumption and in changes therein over time, the charges against revenue were initially classified into 'replacement' and 'depreciation' (based upon the way they were described by the companies concerned) and then subdivided as between rolling stock and the permanent way.

4. The main results

The main, quantifiable aspects of the capital consumption accounting practices of the early railway companies are set out in Table 1. More specifically, this table shows the overall pattern of (apparent) capital consumption charges by the sample set of companies over the period 1830–55, with the charges categorised as 'depreciation' or 'replacement' (where the cost of a capital item such as a new locomotive has been charged to revenue). Both have been subdivided into charges relating to rolling stock and those relating to the permanent way (see columns 4 to 7). The few charges that did not fall into one or other of these categories, or for which there was insufficient information for an allocation to be made with confidence, were treated as 'other' (column 8).⁷

Table 1 identifies the numbers of companies in the sample set (column 1), the number of those companies that made depreciation charges in any year (column 2), and the rather greater number that made some kind of capital consumption charge (column 3). The total depreciation in each year (the sum of columns 4 and 5) is shown in column 9 and the total of all capital consumption charges, depreciation, replacement and other in each year (the sum of columns 4 to 8) is shown in column 10, both then being related to the total profits (before capital consumption and interest) of the sample set of companies, including those that did not appear to make any capital consumption charges, in order to show (in columns 11 and 12) their overall impact on profitability. Column 13 then shows overall capital consumption charges (column 10) as a percentage of total profits of the subset of companies that made a capital consumption charge in the year in question (column 3).

Certain conclusions can be drawn from Table 1. Firstly, the impact of capital consumption charges as a whole on profitability was very slight; across the period 1830–55 such charges represented only 2.16% of profits (as defined above). Even if 1830–37 is excluded, as a period in which capital consumption accounting had hardly begun, the percentage is still only 2.60 (column 12), or 4.10% of the profits of companies making capital consumption charges (column 13).

Moreover, a clear periodisation emerges from Table 1. In the 1830s only a handful of companies

⁴ See also the Report of the Select Committee of 1839.

⁵ Reed, 1975 pp. 35–6; Report of the House of Lords 1847–8, pp. 1–27; Returns Relating to Capital and Loans, 1848–55.

⁶ Companies that leased all their lines and were no longer operating them have been excluded from the sample set. A list of the companies included in the data set for 1830–55 is set out in the Appendix.

⁷ If relating to railway activity. Charges relating to non-railway activities (e.g. steamboats) have been ignored.

Table 1
Capital consumption charges, 1830-55

	(1) n1	(2) n2	(3) n3	Depreciation		Replacement		Other	Total	Total	Dep:	CC:	CC:
				RS	PW	RS	PW	(8)	Dep	CC	PBICCa	PBICCa	CC:
				£k	£k	£k	£k	£k	£k	(10)	(11)	(12)	(13)
										£k	%	%	%
1830	2	0	0	0	0	0	0	0	0	0	0.00	0.00	
1831	2	0	0	0	0	0	0	0	0	0	0.00	0.00	
1832	2	0	0	0	0	0	0	0	0	0	0.00	0.00	
1833	2	0	0	0	0	0	0	0	0	0	0.00	0.00	
1834	2	0	1	0	0	0	3	0	0	3	0.00	2.91	3.41
1835	2	0	1	0	0	0	8	0	0	8	0.00	6.56	8.08
1836	4	0	0	0	0	0	0	0	0	0	0.00	0.00	
1837	3	0	0	0	0	0	0	0	0	0	0.00	0.00	
1838	6	1	1	17	0	0	0	0	17	17	3.46	3.46	10.56
1839	13	2	2	31	0	0	0	0	31	31	3.27	3.27	5.06
1840	18	3	3	37	0	0	0	0	37	37	2.81	2.81	5.09
1841	20	6	7	61	0	0	2	0	61	63	3.09	3.19	4.54
1842	21	7	9	71	0	0	1	2	71	74	3.16	3.29	4.38
1843	19	5	7	61	0	4	2	2	61	69	2.49	2.82	4.59
1844	18	4	6	56	0	11	0	3	56	70	1.86	2.33	3.52
1845	17	4	6	46	0	11	0	1	46	58	1.35	1.71	2.83
1846	16	1	1	5	0	0	0	0	5	5	0.13	0.13	0.94
1847	20	2	2	1	10	0	0	0	11	11	0.24	0.24	0.83
1848	23	2	4	0	26	5	8	6	26	45	0.52	0.91	1.78
1849	22	10	10	57	194	0	0	0	251	251	4.87	4.87	6.66
1850	22	8	9	52	134	0	2	4	186	192	3.32	3.43	4.78
1851	22	10	11	99	159	0	2	3	258	263	3.87	3.94	4.61
1852	20	9	10	49	143	0	1	8	192	201	2.97	3.11	3.79
1853	20	7	7	22	122	0	0	4	144	148	1.99	2.05	2.95
1854	19	7	9	12	165	0	15	1	177	193	2.26	2.47	3.11
1855	19	7	8	12	209	5	0	1	221	227	2.64	2.71	3.82

Table 1
Capital consumption charges, 1830–55 (continued)

	(1) n1	(2) n2	(3) n3	Depreciation		Replacement		Other	Total	Total	Dep:	CC:	CC:
				RS (4) £k	PW (5) £k	RS (6) £k	PW (7) £k	(8) £k	Dep (9) £k	C C (10) £k	PBICCa (11) %	PBICCa (12) %	PBICCb (13) %
Averages:													
Overall	13.6	3.7	4.4	26.5	44.7	1.4	1.7	1.3	71.2	75.6	1.70	2.16	
1838–55	18.6	5.3	6.2	38.3	64.6	2.0	1.8	1.9	102.8	108.6	2.46	2.60	4.10
1830–37	2.4	0.0	0.3	0.0	0.0	0.0	1.4	0.0	0.0	1.4	0.00	1.18	
1838–45	16.5	4.0	5.1	47.5	0.0	3.3	0.6	1.0	47.5	52.4	2.69	2.86	5.07
1846–48	19.7	1.7	2.3	2.0	12.0	1.7	2.7	2.0	14.0	20.3	0.30	0.43	1.18
1849–55	20.6	8.3	9.1	43.3	160.9	0.7	2.9	3.0	204.1	210.7	3.13	3.22	4.24

Notes: n1 = no. of operational companies in the sample set
n2 = no. of companies making depreciation provisions (as in columns 4 and 5)
n3 = no. of companies making capital consumption (CC) charges to revenue (as in columns 4 to 8)
RS = rolling stock
PW = permanent way
CC = capital consumption charges
PBICCa = profit before interest and CC charges of companies in sample set
PBICCb = profit before interest and CC charges of companies in sample set which made a capital consumption charge in the year

Sources: half-yearly financial reports (and other archival materials) of companies in sample set.

were operational, and in most years there were no observable capital consumption charges. Depreciation provisions did not appear at all until 1838 although, from that date, they formed the major part of the charges that were made. From 1838 until 1845, a substantial minority (31%) of the growing number of companies made capital consumption charges, 90% of which were made as depreciation provisions for rolling stock, at a relatively constant rate (averaging 2.86% of profits – or 5.07% of the profits of the subset of companies that made capital consumption charges in those years) although falling away in 1844. Then the recognition of capital consumption, abruptly, almost completely disappeared from 1846 to 1848, inclusive. After this hiatus, which slightly lagged the Mania of 1845–7, depreciation charging resumed in 1849, but was now focussed on the permanent way, which had been virtually ignored in previous years. Provisions for the depreciation of rolling stock returned to the absolute levels of the early 1840s, but now represented a much smaller proportion of profits, and dwindled into virtual insignificance in 1853–5.

Over the period 1830–55, nearly all (94%) of the charges identified in Table 1 were depreciation charges, although none pre-date 1838. Accordingly, Table 2 analyses the depreciation charges made in each of the quinquennial years within the period 1838–55, showing the charges made by the individual companies concerned (again distinguishing between those for rolling stock and those for the permanent way). Thus the information in columns 1 and 2 of Table 1 is analysed into its constituent parts in column 1 of Table 2, and the information in columns 4, 5, 9, and 11 of Table 1 are similarly disaggregated in columns 2, 3, 4 and 6 respectively of Table 2. Additionally, column 7 of Table 2 shows the ranking by size (defined by paid-up share capital) of the individual companies concerned within the sample for the year in question. It is clear from this that, although depreciation was only ever the practice of a minority of the companies in the sample, that minority was heavily drawn from the largest companies; in 1840, for example, only the three largest companies charged depreciation while in 1855 the four largest did so, along with three of the next largest eight companies.

In 1840 and 1845, the two quinquennial years before the break in depreciation practice of 1846–8, only five companies in the sample charged depreciation, all on rolling stock, but even this very small group adopted quite different practices. The Eastern Counties Railway (ECR) valued their rolling stock at the end of each bi-annual accounting period, and debited (or credited) revenue with the change from the previous valuation. The London and Birmingham's (L&B) approach was

more complex; from 1840, the provision was to be 'equal to five per cent in each half-year on the actual cost', a formula soon amended to 5% of cost, less depreciation. The L&B, thought to be a pioneer of the double account system and of the presentation of a general balance sheet (Edwards, 1985: 32–4), by June 1840 was using a more elaborate 'Balance Sheet', that revealed both the historical cost of the rolling stock and the cumulative depreciation charged thereon. Nonetheless, the balance brought forward on the depreciation fund was soon moved from the balance sheet to the capital account, as a *deduction* from the cost of the rolling stock, now shown at net book value. The Grand Junction Railway (GJR) initially adopted a valuation approach, similar to the ECR, 'debiting or crediting (as the case might be) the Half-year's Receipts with the balance of a comparative valuation, by competent persons of the Company's moveable stock' (Directors' report, December 1841), but these valuations ceased in mid-1841, and thereafter, the GJR set aside profits to a depreciation fund. However, when the GJR amalgamated with the Liverpool and Manchester (which did not have a depreciation fund) in 1845, the accumulated fund of £18,500 was written back and distributed as an additional dividend to GJR shareholders.

The Great Western Railway (GWR) from 1841 was deducting its provision from expenditures in the capital account and showing rolling stock effectively at net book value (although from June 1844 total depreciation was noted on the capital account, so that the gross cost of rolling stock could easily be derived) and assuming a useful life of about 25 years. The Lancashire and Yorkshire, however, charged revenue with the 'amount necessary to provide for the renewal of the stock when worn out,' depreciating locomotives on a 'machine use' basis (of £1 for every 100 miles run) and carriages and wagons at 5% of cost (Directors' report June 1841, on which date the company was still known as the Manchester and Leeds Railway). The terminology adopted reflected the differing approaches: whereas the GWR and the L&Y referred to a 'Depreciation Fund' and the L&B to a 'Reserve Account, for the Depreciation of Stock', the ECR instead referred to its 'Reserve account for wear and tear of engines and carriages.'

Although only a handful of companies depreciated their rolling stock before the Mania, Bryer has argued that the 'principle of charging depreciation on rolling stock, as an essential element in the measurement of sustainable income, was widely understood by those professionally interested in railways' (1991: 448). The directors and shareholders who rejected depreciation were certainly not in ignorance of the arguments; in 1843, a director of the London and South-Western Railway

Table 2
Breakdown of depreciation provisions, 1840-55

			Depreciation				Dep:	
		(1)	RS	PW	Total	PBICC	PBICC	RANK
		n1	(2)	(3)	(4)	(5)	(6)	(7)
			£k	£k	£k	£k	%	
1840								
Eastern Counties Railway	ECR	1	4	0	4	9	44.44	2
London and Birmingham	L&B	1	30	0	30	466	6.44	1
Grand Junction Railway	GJR	1	3	0	3	252	1.19	3
Other companies		15	0	0	0	591	0.00	
Per Table 1		18	37	0	37	1318	2.81	
1845								
Eastern Counties Railway	ECR	1	1	0	1	84	1.19	8
Great Western Railway	GWR	1	20	0	20	500	4.00	3
Lancashire and Yorkshire	L&Y	1	10	0	10	225	4.44	9
London and Birmingham	L&B	1	15	0	15	683	2.20	1
Other companies		13	0	0	0	1909	0.00	
Per Table 1		17	46	0	46	3401	1.35	
1850								
Eastern Counties Railway	ECR	1	0	22	22	385	5.71	7
Lancashire and Yorkshire	L&Y	1	7	23	30	340	8.82	4
London and Brighton	LBSC	1	0	1	1	324	0.31	10
London and North Western	L&NW	1	0	32	32	1482	2.16	1
Midland	Mid	1	6	20	26	601	4.33	5
North Staffs	NSt	1	6	7	13	121	10.74	12
South Eastern and Dover	SED	1	29	10	39	301	12.96	3
York and North Midland	YNM	1	4	19	23	178	12.92	11
Other companies		14	0	0	0	1866	0.00	
Per Table 1		22	52	134	186	5598	3.32	
1855								
Eastern Counties Railway	ECR	1	0	15	15	419	3.58	9
Lancashire and Yorkshire	L&Y	1	0	25	25	576	4.34	4
London and Brighton	LBSC	1	0	1	1	378	0.26	10
London and North Western	L&NW	1	0	81	81	1622	4.99	1
Midland	Mid	1	12	30	42	848	4.95	3
North Eastern	NER	1	0	55	55	902	6.10	2
North Staffs	NSt	1	0	2	2	199	1.01	12
Other companies		12	0	0	0	3435	0.00	
Per Table 1		19	12	209	221	8379	2.64	

Notes: n1 = No of companies (See Table 1 col 1)

RS = rolling stock

PW = permanent way

CC = capital consumption

PBICC = profit before interest and CC of companies in sample set

The L&B and the GJR became part of the L&NW from January 1846.

The NER was formed in 1854 from an amalgamation of the YNM and three other companies.

Sources: half-yearly financial reports (and other archival materials) of companies in sample set.

(L&SW) for example (one of our sample of companies), reminded his members of the basis in 'temporal equity' for charges that would anticipate eventual replacement:

'In a locomotive engine, as in a ship or other description of mechanism, there was a vitality which was constantly decreasing; and though

they might keep it up for a certain number of years, still a period was gradually approaching when the stock would no longer bear the requisite repairs. He had always entertained a strong conviction that the gradual wear and tear and depreciation that was continually going on, should be regularly and fairly spread over that portion

of time in which the stock was used, and that it should not cast upon futurity.'

His chairman, who felt that depreciation was unnecessary when the efficiency and value of the rolling stock was being fully maintained, as at the groundbreaking Liverpool and Manchester, which still had no need of a depreciation fund, argued instead that if the company were operating a steamship:

'...which cost 70,000l or 80,000l, it would be very proper that a sum should be periodically set aside to make good the original cost. In a railway, however, the things to be renovated were in minute parts, and could be, and on that line had been, restored as decay presented itself (hear, hear). As to any deficiency from first cost, that was fully met by the improvements of the day. Engines which had originally cost the Company 1500l. each, could now be procured for 1000l. and thus upon 50 engines the Company would secure a saving of 25,000l (hear, hear)' (*Railway Times*, 4 March 1843: 284).

The *Railway Times* commented on the discussion, anticipating Brief's position on 'accounting error':

'If then, the earnings of any particular period be divided, without provision having first been made for this gradual ebbing of vitality, it seems to us that the proprietors are dividing more than the profits of such period, and that upon themselves hereafter, or upon their successors, must fall the whole accumulated weight of the several "depreciations" ...which ought to have been met from half-year to half-year (4 March 1843: 262).

On the other hand, the argument that replacement charges should not be 'cast upon futurity' was flatly rejected by *Herapath's Journal* few years later, on the grounds that 'the shareholders of a railway are not associated together like a common partnership, always the same parties, but are a fluctuating body – in one half and out the next. To tax, therefore, one half year for the wants of another is unjust, and the injustice is heightened when the tax is not for a certain want, but an undefined one' (*Herapath's Journal*, 2 September 1848; quoted by Vamplew, 1978: 150).

The London and North Western (L&NW) was the first major company to start charging depreciation again after the Mania, in 1847. The Midland Railway (MR) did likewise in 1848 and by 1850 eight companies in the sample were making depreciation charges, although practices were now very different from before the Mania. The emphasis had now switched to the permanent way, both in terms of the size and incidence of the provisions (three companies charged depreciation only on the permanent way and five on both rolling stock and the

permanent way) but, more important, the so-called 'depreciation provisions' were now serving the very different purpose of merely smoothing out the impact of replacement expenditures on the profit and loss account.

The directors of the Midland Railway explained the reasoning behind the establishment of a 'fund for the renewal of permanent way', but not for the rolling stock:

'[With] respect to the renewal of engines, carriages and other working stock, having now obtained what they believe to be an adequate supply for the working of the main line and branches, the lines in course of construction, as well as those open for traffic, no other sums under this head will be placed to the capital account. The engines, carriages, wagons, &c., will be kept in repair as they have hitherto been, at the cost of revenue, so long as they are worth repairing; and when worn out will be replaced with new ones from the same source. The Directors are of opinion that this will be a much better mode of maintaining the capital stock of the Company than by forming a depreciation fund. It may be asked, why then form a fund for the renewal of permanent way? The answer is, that the wear and tear is comparatively unseen and difficult to appreciate, and if maintained out of ordinary revenue might in some half-years form a very large and difficult item to deal with, whilst in others it would be very light, and so produce a fluctuation in the dividends very much to be deprecated, whilst in a [sic] case of engines, carriages, &c., the wear and tear is perceptible, and more readily dealt with each half-year' (Directors' Report December 1848, *Railway Times*, 17 February 1849: 165).

Thus, fixed provisions were to be made to a fund, out of which the (irregular) payments for track renewal would be made. Such provisions would depend on estimates being made of the life of rails and the cost of their replacement, but had nothing to do with historical costs. Actual expenditure would be debited to the fund, over time would equal the provisions made and would thus be kept out of the capital account, which would continue to show the historical cost of the assets (many of which had been scrapped). This approach was not, however, confined to the Midland; instead, each of the subset companies making depreciation provisions in the post-Mania period, whether for permanent way or rolling stock, actually used them merely to smooth the impact of replacement expenditures on the published revenue accounts.

The L&NW established its depreciation fund with a rather different objective, to build up a fund over a period that would finance the complete re-

Table 3
Summary of Permanent Way Provisions at December 1855

	(1) <i>Start</i>	(2) <i>Prov</i> £k	(3) <i>Exp</i> £k	(4) <i>Cap</i> £k	(5) <i>Bal</i> £k	(6) <i>Prov/Exp</i>
Eastern Counties Railway	1849	104	(112)		(8)	93%
Lancashire and Yorkshire	1849	140	(149)		(9)	94%
London and Brighton	1849	52	(47)		5	111%
London and North Western	1847	291	(516)		(225)	56%
Midland	1848	179	(333)	(66)	(220)	54%
North Eastern	1854	207	(242)		(35)	86%
North Staffs	1849	27	(14)		13	193%
		1000	(1,413)	(66)	(479)	71%

Notes: Start = Date depreciation of permanent way began
Prov = Cumulative provisions from commencement to end of 1855
Exp = Cumulative expenditure on fixed assets from provision
Cap = Expenditure capitalised
Bal = Balance of provision at 31 December 1855 (in parenthesis means debit balance)
Prov/Exp = Cumulative provisions as percentage of cumulative expenditure

placement of the track when this was required in the future, but in practice this soon became a replacement fund and 18 months after it was set up, the fund was in debit, the expenditure charged to the fund having exceeded the provisions made. These funds were referred to as reserves or accounts for the 'Renewal of Rails' (L&NW), 'Renewal of Permanent Way' (L&Y), 'Renewal of Permanent Way Materials' (Midland) and the like. The reserve account of the South Eastern and Dover was unusually described as being for the 'Deterioration of the Permanent Way and Works' – but it was operated in the same fashion.

The permanent way depreciation funds of five of the eight companies maintaining such a fund in 1850 allowed interest on the balance of the account (usually at 5% p.a.) as if the provisions were actual cash reserves placed on deposit in a 'ring-fenced' account.⁸ This had a certain logic in the context of the L&NW's original plan, but persisted even when the plan was abandoned, and was adopted by other companies for whom the fund was never more than a smoothing device, possibly because the accounting policies of the L&NW, the largest railway company, were widely regarded as a model for others to follow.⁹ The provisions for rolling stock also worked similarly as devices for smoothing replacement expenditure, except that 'interest' was accrued by only one of the five companies concerned.¹⁰

The changes in the period 1850–55 were more evolutionary than those in the preceding five-year period (several companies moved to replacement accounting in the case of rolling stock, so that only two companies had depreciation funds in 1855 and

the practice of accruing interest on funds waned) although the cumulative position in 1855 was very striking in one important respect. Although the companies continued to make provisions for permanent way 'depreciation' these were heavily 'overdrawn', having covered only 71% of the replacement expenditures made (see Table 3). Thus, after the Mania, the railway company 'depreciation' provisions, now substantially for the permanent way, had come to function as a modified (and possibly misunderstood) form of replacement accounting and as a mechanism for enhancing rather than reducing operating profits!

⁸ This was what Glyn was proposing to do on the London and North Western, although in most cases the fund remained notional, and the 'interest' simply increased the depreciation charge to the revenue account. The London and Brighton, however, placed its fund in the hands of trustees, while the Glasgow, Paisley, Kilmarnock & Ayr's was 'invested in Guaranteed Stock of the Company', the dividend from which was added to the fund (Accounts of 31 January 1849; PRO RAIL 1110/149).

⁹ Lardner took the idea from the London and North Western and promoted it in his influential *Railway Economy*, first published in 1850 (Lardner, 1968, pp. 63–5).

¹⁰ The 'Works, Stock and Estate Account' opened by the London and North Western in December 1850 was unusual, in that the provision each half-year was fixed at 10% of the gross cost of the 'additions' concerned, which were thus 'at the Cost of Revenue, to be liquidated in five years.' The impact of this policy was much the same as the charging of a predetermined fixed provision, except that the incidence on the revenue account would inevitably lag the acquisition. As elsewhere, no charge related to prior capital expenditure, which remained at historical cost in the capital account, in which the cost of replacement rolling stock would not appear.

5. Discussion and conclusions

The early UK railway companies were the largest businesses of their time and the first to face really serious problems of accounting for capital consumption. Whereas the canal companies had often owned only a single permanent asset, the early railway companies owned a far wider range of capital assets, only some of which were truly long-term. Even part of the so-called 'permanent way,' the iron rails themselves, soon proved vulnerable to technological change in the form of more powerful, heavier engines that then required their replacement with heavier, more durable rails. The forms of accounting that been sufficient to the circumstances of the canal companies were no longer adequate to the more complex position of the railways and, by force of circumstance, the latter took on a pioneering role in the development of financial reporting practices to deal with the problems of capital consumption.

The existing literature suggests that there were distinct variations over time in the depreciation accounting practices of the early railway companies:

- a) in the late 1830s, when a large number of lines had opened for business, many of the companies concerned began to depreciate their rolling stock (Pollins, 1956: 345–7);
- b) in the 1840s, before the Mania, it was quite common practice to provide for depreciation of rolling stock (Edwards, 1986a: 255). Edwards and Boyns, more cautiously, state only that 'a number of [railway] companies charged depreciation' (1994: 1177, fn. 10), but Bryer describes depreciation accounting (of rolling stock) as the 'modal practice' of railway companies in the early 1840s (1991: 449);
- c) during the Mania, depreciation of rolling stock was abandoned (Edwards, 1986a: 255; Pollins, 1956: 347) and, for a few years afterwards, (Pollins, 1956: 347); thereafter, companies resumed their earlier depreciation charging practices, but now focussed instead on the permanent way (Pollins, 1956: 347–8);
- d) in the 1850s, depreciation accounting was abandoned in favour of replacement accounting, that is, the charging of current expenditures on renewals and maintenance against revenue (Edwards, 1986a: 253–4; Bryer, 1991: 473; Pollins, 1956: 348–9).

The existing literature, with considerable inconsistency, also suggests both that the railway companies understated profitability after the Mania (after overstating profitability during the Mania) largely by means of changes in depreciation policy (Bryer, 1991: 443, 456) and that over an extended period, railway companies overstated their profits by systematically understating the true cost of capital

consumption (Brief, 1965: 15–20).

In this paper, the published accounts of a substantial set of companies covering the period 1830–55 were examined for evidence of their capital consumption accounting policies. The main findings, based on the analysis of this data set, support a number of statements in the literature about the general direction of changes in the depreciation and replacement accounting practices of the railway companies in that:

- a) depreciation charging did not appear until 1838, but was then the main form of capital consumption accounting until 1845;
- b) capital consumption charges of any sort virtually disappeared in the years 1846–8;
- c) depreciation accounting resumed in 1849 and was then focussed on the permanent way.

The findings also strongly support Brief's view that the railway companies generally understated the cost of capital consumption in their industry. In a number of important respects, however, the findings are far less consistent with other statements in the literature in that:

- a) capital consumption charges, whether in the form of depreciation charges or of replacement accounting, were never a very important charge against profits (across the period 1838–55 they represented only 2.6% of profits). The very low level at which they were levied suggests that their importance may well have been exaggerated to date. Certainly it is difficult to see how they could have possibly functioned to 'understate profitability after the Mania';
- b) depreciation charges represented 94% of capital consumption charges across the period 1830–55. Replacement accounting was of little importance, as a charge against profits, in any year within the period 1830–55, although there were (strictly relative) changes in its incidence;
- c) by 1855, depreciation provisions charged against profits were substantially below the level of replacement expenditures charged against those provisions on the balance sheet and were, at that time, functioning as a mechanism for enhancing rather than reducing operating profits;
- d) within the period 1830–55, depreciation accounting was never the modal practice of companies within the railway industry. The data set used in this paper was heavily focussed on larger companies but, even within this group, depreciation was only charged against profits by a (substantial) minority of companies. Depreciation accounting began as a practice of only the largest companies but gradually spread to other large companies.

Additionally, the paper provides systematic evidence of the considerable diversity in capital consumption accounting practices of the most important companies in the dominant industry in the UK economy in the second quarter of the 19th century, an industry that has been widely seen as having a pioneering role in the gradual development of accounting practices. As Pollins states, when depreciation charging recommenced, the focus of attention did indeed shift to the permanent way, but there was also an important conceptual shift, as companies turned their attention away from writing off the historical cost of existing assets, to creating funds that would equalise prospective replacement expenditures, as noted by Edwards and Boyns (1994). However, what appeared to be a form of 'depreciation accounting' in fact bore little resemblance to present-day meanings of the term and became instead a modified form of replacement accounting.

Thus, in the period after the Mania, from 1849 until 1855, the major companies establishing funds for the renewal of the permanent way appeared to be charging more expenditure to the funds than they charged to revenue so that, wittingly or not, the effect of 'depreciation accounting' at this time was to exaggerate the understatement of capital consumption. Brief has argued that the capital consumption practices of the railways generally imparted an upward bias to their profits and our evidence would tend both to confirm this and to suggest that this tendency was at work rather earlier in the 19th century and in more diverse ways than has been generally supposed.

Appendix

Companies included in data-set

Birkenhead, Lancashire and Cheshire
Birmingham and Derby
Birmingham and Gloucester
Birmingham, Bristol and Thames
Bristol and Exeter
Cheltenham
Chester and Holyhead
Durham and Sunderland
East Lancashire
Eastern Counties
Edinburgh and Glasgow
Glasgow and South Western
Glasgow Paisley Kilmarnock
Great North of England
Grand Junction
Great Northern
Great Western Railway
Hull and Selby
Lancashire and Carlisle
Leeds Northern
Liverpool and Manchester
London and Birmingham

Appendix (continued)

London and Blackwall
London and Brighton
London and Croydon
London and Greenwich
London and North Western
London and South Western
London and Southampton
Manchester and Birmingham
Manchester and Leeds
Manchester, Bolton and Bury
Manchester, Sheffield and Lincolnshire
Midland
Midland Counties
Newcastle and Carlisle
Norfolk
North British
North Eastern
North Midland
North Staffs
Northern and Eastern
South Devon
South Wales
Stockton and Darlington
Thames Haven
York, Newcastle and Berwick
York and North Midland

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Limited Liability Act (1855) 18 & 19 Vict. c. 133
Report of the House of Lords, (PP 1847–8 Cmd. 71) Vol. XIV, 1–27.
Report of the House of Lords (Monteagle) Select Committee on the Audit of Railway Accounts; Third Report; (PP 1849, Cmd. 371, 421) Vol. X.
Report of the Select Committee, (PP 1839 Vol. X).
Report of the Committee of Investigation to the Shareholders of the Eastern Counties Railway ('EC Report'); reproduced as Appendix 'A' of the Second Report of the House of Lords Select (Monteagle) Committee on the Audit of Railway Accounts; (PP 1849, Cmd. 371) Vol. X, pp. 381–427.
Response of the Directors of the Eastern Counties Railway to the Eastern Counties Report (1849), London; LSE Reference Library.
Report of the Committee of Investigation to the Shareholders of the Midland Railway ('Midland Report'); Derby Mercury (Extraordinary Edition), 15 August 1849, pp. 1–62; Derby City Reference Library.
Reports of the Committee appointed by the proprietors of the York, Newcastle and Berwick Railway, to investigate the Great North of England Purchase Account ('Prance Report'); attached as Appendix 'B' to the Second Report of the House of Lords Select (Monteagle) Committee on the Audit of Railway Accounts; (PP 1849, Cmd. 371) Vol.

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Top executive dismissal, ownership and corporate performance

Martin J. Conyon and Annita Florou*

Abstract—This paper evaluates the empirical relationship between top executive turnover and firm performance. Based on a sample of the 460 largest UK listed companies during the period 1990–1998, we establish an inverse and robust statistical relation between the probability of a management change and a firm's performance: top executives are fired for poor performance. This can result from internal monitoring of management by the board or block share holders. Second, the data indicate that only very poor levels of performance affect significantly the turnover likelihood: corporate performance must fall dramatically to force a senior executive job separation. Third, the likelihood of managerial turnover for poor performance has not changed over time: today's senior managers face the same disciplining effects as those senior managers in earlier years. Finally, there seems to be no evidence that managerial stock ownership, measured as the proportion of ordinary shares owned by top managers, enables them to become entrenched.

1. Introduction

This paper addresses a central corporate governance question: are changes in top management associated with poor company performance? This problem has, of course, been addressed before in the literature and the general empirical conclusion is that a negative association exists between CEO turnover and performance. CEOs are fired for declining stock prices (see the review by Murphy, 1999). In the US, Coughlan and Schmidt (1985) and Warner, Watts and Wruck (1988) document an inverse relationship between the probability of management turnover and firm performance. Recently, Conyon (1998) and Dahya et al. (2002) also document a negative CEO turnover – corporate performance relation for UK firms.

The contribution of this paper is four-fold. First, we document the top executive turnover and firm performance relation for a panel of hand collected UK data between 1990 and 1998. The existing UK

evidence relating to management turnover and performance is comparatively sparse. It typically relies on survey-based data (Conyon, 1998) or focuses on specific industries (Cosh and Hughes, 1997) or performs a less inclusive and comprehensive identification and classification of top executive departures (Dedman, 2000; Dahya et al., 2002). In contrast, the quality of our hand collected governance data means that for the first time, we can map a higher frequency of changes in the UK top management teams between 1990 and 1998 as well as focus on differences in management change based upon forced and non-forced executive departures.

Second, we address the time series heterogeneity of the management turnover and firm performance relation. That is, has the dismissal likelihood for poor performance increased over time in the UK? Existing US findings regarding this effect are limited and contradictory (Mikkelsen and Partch, 1997; Murphy, 1999; Huson et al., 2002). Prior UK research has considered heterogeneity in the CEO dismissal – performance relationship only surrounding the implementation of the Cadbury proposals (Dedman, 2000; Dahya et al., 2002). The primary focus of the above studies is whether dismissal for poor performance is more likely after 1992. Moreover, the reported evidence finds conflicting results. We depart from these papers by providing a more general test of how the CEO dismissal and performance relationship has changed over time. In particular, we investigate whether senior executives are more likely to be fired for poor performance today (i.e. in 1994–1997) compared with the past (i.e. in 1991–1993). In addition, we evaluate the sensitivity of our tests by defining alternative performance windows (e.g.

*The authors are, respectively, at The Wharton School, University of Pennsylvania, USA and the London Business School, UK. They would like to thank Mike Devereux, Andrew Leone, Simon Peck, Peter Pope, Graham Sadler, seminar participants at London Business School, Warwick University, EAA Conference (2001), AAA Meeting (2001) and the Euro-Conference project in Palermo for comments during the preparation of this paper. The authors are also grateful to the editor and an anonymous referee for their suggestions and analysis of their paper. They gratefully acknowledge financial support from the Economic and Social Research Council (Award number R00429924142) and PricewaterhouseCoopers. Correspondence should be addressed to Professor Conyon at the Management Department, Wharton School, University of Pennsylvania, 2000 Steinberg Hall-Dietrich Hall, Philadelphia, PA 19104, USA. Tel: +1 (0)215 898 0744; Fax: +1 (0)215 898 0401; E-mail: conyon@wharton.upenn.edu

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1991–1992 versus 1993–1997).

Third, how bad does firm performance really have to be before top executives are replaced? This is unique to the UK literature. Typically, the literature estimates a single (negative) parameter that acts as supporting evidence that CEOs are replaced for poor performance. However, we evaluate whether doing really badly (stock returns in the low deciles – e.g. 10th) has different effects on managerial turnover compared to doing really well (stock returns in the high deciles – e.g. 90th).

Finally, we provide additional evidence on a controversial issue related to the turnover-performance relation, namely the impact of CEO shareholdings on the internal monitoring efforts. It is sometimes argued that when the CEO is an important equity holder in the company, then he or she can become potentially entrenched, and his or her shareholdings may prove a stumbling block to those who wish to hasten departure for poor performance (Morck et al., 1988). The existing evidence relating to the role of equity in the turnover-performance relation is both sparse and mixed.

This study is based on unbalanced panel of the top 460 UK companies over the period 1990–1998. Since our main focus is on the relationship between the likelihood of top executive turnover and poor performance, it is important that we use a number of performance metrics in our modelling procedure¹. Accordingly, firm performance is measured in a number of ways including absolute total shareholder returns, accounting earnings, market-adjusted shareholder returns as well as industry-adjusted shareholder returns and accounting earnings. Managerial stock ownership is measured by the fraction of ordinary shares owned by the company's top manager.

Our main contributions to the UK corporate governance literature are as follows. First, there is an inverse and robust relation between the probability of a top management dismissal and firm performance: senior managers are fired for poor performance. Second, top executives are more likely to leave their office today compared with the

earlier years. Nevertheless, our results indicate that the correlation between managerial dismissal and company performance has not changed markedly over this time period. There is some slight (but not compelling) evidence that top executive forced turnover rates and stock returns are more negatively correlated over the latter part of the 1990s. Third, we examined how bad performance has to be for senior managers to be fired. Our empirical results indicate that performance has to fall dramatically for top managers to be dismissed. Finally, we addressed the issue of whether managers who hold significant share stakes are able to insulate themselves against dismissal in the event of poor performance. Our empirical results indicate that there is no evidence of managerial entrenchment at high levels of executive stock ownership.

The remainder of the paper is organised as follows. Section 2 discusses related theoretical background and prior research. Data are described in Section 3. Findings are presented in Section 4. Section 5 reports the results of additional robustness tests. Concluding remarks are made in Section 6.

2. Theory and prior research

Managerial discipline can be achieved (and agency costs reduced) by the complementary intervention of both internal and external control mechanisms (Mikkelsen and Partch, 1997).² This study investigates the quality of governance mechanisms by focusing on the replacement of the senior management team in response to poor corporate performance.³ In addition, we examine the incentives facing CEOs who hold large share stakes. It is widely argued that the most important internal governance institutions are the directors' board and large shareholders (Tirole, 2001).

The job of the board is to hire, fire and compensate the CEO. Fama (1980: 294) states: '[T]he board is viewed as a market-induced institution, the ultimate internal monitor of the set of contracts called a firm, whose most important role is to scrutinise the highest decision makers within the firm'. Within this context, it is argued that directors increase the value of their human capital, which depends primarily on their performance as internal decision managers in other organisations, by strengthening their reputations as decision control experts (Fama, 1980; Fama and Jensen, 1983).

Nevertheless, several factors suggest that directors will not necessarily act in shareholder interests. For example, outside directors may owe their positions to management who proposed them in the first place (Hart, 1995). Secondly interlocking and multiple directorships may reduce the effectiveness of outside directors (Patton and Baker, 1987; Hart, 1995). Finally, directors may not own

¹ Conyon (1998) and Conyon and Murphy (2000), for example, focus only on stockholder returns as a performance measure.

² External monitoring mechanisms include a) the managerial labour market (Fama, 1980); b) product market competition (Alchian, 1950; Stigler, 1958; Hart, 1983); c) capital market competition (Jensen, 1991) and; d) the market for corporate control (Manne, 1965; Fama and Jensen, 1983).

³ Removing a poorly performing manager in companies which do not face immediate external threats (e.g. bankruptcy, take-over) is one of the most observable signals of the internal monitors' effectiveness. Yet, managerial dismissal can still be partly influenced by external factors (e.g. capital market competition).

a substantial fraction of the company equity and therefore may have little to gain personally from improvements in company performance (Jensen, 1993; Hart, 1995).

Another significant internal control mechanism is monitoring by holders of large share blocks. Large shareholders have incentives to replace inefficient managers in order to improve company performance; they have both a general interest in profit maximisation and enough control over the assets of the firm to have their interests respected (Shleifer and Vishny, 1986; Shleifer and Vishny, 1997). By owning a large enough stake in the company, major shareholders find it profitable to monitor top management; the large shareholders' return on their own shares suffices to cover their monitoring costs. Moreover, not only they have the incentive to exercise control but also the power to activate it through their voting rights.

Nevertheless, the efficacy of large shareholders should not be taken for granted, since this is intimately tied to their ability to defend their rights, which in turn depends on the sophistication of the underlying legal system (Shleifer and Vishny, 1997). Another possibility is that large investors would agree to leave the management alone, in exchange for having their shares repurchased at a premium (Hart, 1995; Shleifer and Vishny, 1997). Finally, in the case where the large shareholder is an institution, it is not clear whether the institution's manager – who acts on its behalf – will properly monitor the company as opposed to serve his own interests (Hart, 1995).

If, despite the caveats we have raised above, the internal monitoring mechanisms are effective; and if firm financial performance reflects managerial performance, there should be a negative relation between the probability of a top management change and corporate performance (Jensen and Murphy, 1990).

A related concern is the impact of executive equity ownership on the internal monitoring efforts. Ownership of the firm's shares by its managers has countervailing effects: an incentive alignment effect that increases with the percentage of share value owned by the manager (Jensen and Meckling, 1976) and an entrenchment effect that increases with the percentage of shares votes controlled by managers (Demsetz, 1983; Morck et al., 1988; Stulz, 1988). Moreover, managerial ownership may inhibit the external corporate control market and therefore reduce the effectiveness of internal monitoring efforts (Denis et al., 1997). In general, the entrenchment effect dictates that top managers with a substantial stake in their companies are relatively hard to remove, even in poorly performing companies.

In general, there is a well-documented negative relation between firm performance and the proba-

bility of top executive turnover (e.g. Coughlan and Schmidt, 1985; Weisbach, 1988; Warner et al., 1988; Parrino, 1997; Huson et al., 2001 for US evidence).⁴ In the UK, Dedman (2000) and Dahya et al. (2002) are two recent studies on executive turnover.⁵ This paper distinguishes itself from the above studies in four ways. First, we map executive departures by focusing on the identity of each company's chairman, CEO and group managing director instead of just the CEO or the managing director (as in Dedman's study) and the CEO or in very few cases the executive chairman (as in the study of Dahya et al.). This is of particular importance in the UK, since the title "chief executive officer" has only comparatively recently been used to denote the top corporate position. As a result, this study more accurately identifies the company's leading executive and captures a higher frequency of top management departures than prior work. Secondly, due to the quality of the data, our study performs a detailed analysis of all types of executive departures (including the retirements) and hence uses a much less noisy measure of forced departures than prior work (including the US studies). Thirdly, we examine the poor – performance hypothesis across different levels of firm performance. Finally, we investigate the effect of the temporal shifts in the general economic environment on the disciplining of inefficient managers. In contrast, both Dedman (2000) and Dahya et al. (2002) focus on the specific impact of the Cadbury Report's recommendations on the turnover-performance association.

The entrenchment effect of managerial stock ownership remains controversial. Weisbach (1988), for example, finds no evidence that CEO shareholdings reduce the likelihood of turnover. In contrast, Denis et al. (1997), document that turnover is significantly less sensitive to performance at high managerial ownership levels while Dahya et al. (1998) conclude that managerial entrenchment effects occur at extremely low ownership levels (e.g. 1%).⁶ This paper contributes to the above debate by providing additional evidence on the entrenchment hypothesis where the share ownership variable consists of the ordinary holdings of only the top executive and not of all officers and directors.

⁴ Other US studies in this topic include Harrison et al. (1988); Gilson (1989); Barro and Barro (1990); Jensen and Murphy (1990). Murphy (1999) provides a very good and recent review of empirical evidence on management turnover.

⁵ Earlier UK studies on executive turnover include Conyon (1998) and Conyon and Nicolitsad (1998).

⁶ See also Allen and Panian (1982), Morck et al. (1989), Dedman (2000).

3. Methodology

3.1. Sample selection procedure

This study is based on a sample of the top 460 UK companies listed on the London stock market over the period 1990–1998. The companies are selected as follows. Using Datastream and excluding all investment trusts and the repetitions of those firms that have two classes of shares listing on the London Stock Exchange (e.g. B or Non-Voting shares), the largest 300 UK companies ranked by market capitalisation on 1 January each year are selected. In each of the separate years over 1990 to 1998 the largest 300 companies will, of course, change as some companies exit the list (e.g. through takeover, death or decline in capitalisation) and other firms enter. Nonetheless, it is important to emphasise that once a company enters the top 300 list at some point during the 1990–1998 period, it stays in the sample for the entire period as long as it continues to be listed on the London Stock Exchange and irrespective of its market value. So, for example, if company A becomes one of the top 300 UK firms in 1994, information for it is entered for all the years – before and after 1994 – during which it is listed, and even though it may drop out the top 300 list due to a decline in its market capitalisation. Hence, companies leave the sample only when they become de-listed because of take-over, bankruptcy etc.

The selection procedure results in an unbalanced panel of 460 listed UK companies, out of which 292 firms (approximately 63.5% of the total sample) are listed during the entire 1990–1998 period, 98 companies (21.3%) are de-listed at some point during the 1990–1998 period and 70 companies (15.2%) are quoted on the London Stock Exchange some time after 1990 and remain quoted until 1998.

Since the sample selection process is based on identifying the largest 300 firms by market capitalisation, our results may be biased towards good performers. To check the above, we compare the stock price performance of our sample with that of the market. In particular, we calculate stock returns for all sample firms and compare them to the returns for all companies listed in the London Stock Exchange over the 1990–1998 period. Share performance is measured as the log of (RI_{t+1}/RI_t) , where RI stands for Return Index on 1 January.⁷ Comparing the stock performance of the sample with that of the market, we find that the median and mean values of the former are 0.100 and 0.065 respectively, while the equivalent values for the market are 0.110 and 0.087; the p-value for a test of the difference in the means is 0.018. Moreover, comparing the top and bottom deciles of sample performance with those of the market, we find that the average stock return of the best sample and market performers is 0.661 and 0.767 respectively;

the p-value for a test of the difference in mean stock returns is 0.000. Similarly, the average share performance of the worst sample and market performers is –0.754 and –0.726 respectively; the p-value of the means' difference is 0.391. Results, therefore, indicate that there is no bias towards good performers; instead our sample appears to under-perform the market.

In addition to Datastream, we use Extel Changes of Names 1965–1998 to identify companies that changed their name during 1990–1998 and the London Share Price Database (LSPD) to identify the first date on which the company was listed on the London Stock Exchange (birth date) and the day on which the company ceased to exist (death date) due to take-over, merger or liquidation. In these cases, top management information is not entered for the years preceding the birth date and/or the years following the death date. The number of sample firms per year is presented in Table 1.

3.2. Identifying the most senior executive changes

Identifying the most senior company executive in UK firms, as noted above, is a complicated task since the title 'chief executive officer' has only comparatively recently been used to signal the top corporate position. Other titles such as chairman and managing director are also used – especially in earlier periods. Accordingly, the names and the type of position (i.e. executive or non-executive) of each company's chief executive officer (CEO), chairman (Chair), and group managing director (MD) – wherever applicable – are manually recorded from the September issue of *PWC Corporate Register* (Companies Section). This procedure is repeated for each September edition of *PWC Register* from 1990 to 1998. Information is supplemented from Extel Financial UK Quoted Companies-Annual Cards and Company Annual Accounts provided by LASER D. Management changes are identified by comparing management team composition across years. We follow the identity of the three top managers over a nine-year window from 1990 to 1998 for each firm.⁸

⁷ A company's return index shows the growth in the share value and the value of the dividends. The relevant formula is: $RI = RI_t * (P_t + D_t)/P_{t-1}$, where P_t = price on ex-date (i.e. the day dividend payments become certain), P_{t-1} = price on previous day and D_t = dividend payment associated with ex-date t .

⁸ Title changes alone are less likely to be related to poor performance and are therefore excluded from the analysis. We do include, however, three cases of title-reassignment, reported in the *Financial Times* (FT). These are: a) A. Roddick, CEO of Body Shop who became co-chair; b) R. Montague, executive chairman of CTR, who was initially moved to the position of CEO and in a year's time he was entirely removed from the company and c) E. Pountain, executive chairman and CEO of Tarmac who was demoted to non-executive chairman. In all three cases, top managers agreed to take a role with a lot less responsibilities whereas a new CEO joined the company.

3.3. *Dependent variables*

The primary dependent variable in this study is the change in the Most Senior Executive (MSE). This is an indicator variable equal to one if there is a change in the MSE in a given year and zero otherwise. Clearly, given the complexity in constructing the data it is important to understand what the MSE refers to. The Most Senior Executive in each company for each year is taken to be the CEO if such a role exists. When no CEO exists the MSE is taken to be either the executive chairman or the group-managing director.

All top management changes are cross-checked with the Financial Times Archive to identify the exact date of the announcement of the change, the reason for the change given by the company and the destination of the departing manager. In addition to the FT Archive we use two other sources to complement our data: a) Extel Announcements and b) Company Annual Accounts.

In total there are 318 MSE changes. Of these changes three (0.9%) are not mentioned in any of the above sources, while 11 changes (3.4%) are reported either in the FT Archive or the Extel Announcements or the Company Accounts, but the information given is limited. As expected, the most commonly reported reason is retirement; 100 cases (31.4%). Interestingly, only one company reports that it sacked its manager.

3.4. *Identifying forced/non-forced departures*

Termination of top manager's employment is more likely to be a response to poor management performance than are management changes in general. Consequently, the effectiveness of internal control mechanisms can be assessed by comparing forced departures with non-forced departures. Unfortunately, as discussed in Warner et al. (1988) and Weisbach (1988), identification of forced departures can be very difficult because companies do not announce the true reason behind their managers' resignations. For example, a stated retirement may really be a forced departure. However, if a press report does indicate that a management change is forced (i.e. CEO was ousted by the boardroom), one can be reasonably confident that the change is indeed forced.

We construct the forced and non-forced samples using the following decision process: First, we classify as either non-forced or forced all the departures for which we are able to corroborate the cause independently. Hence, executive changes due to normal succession, death/illness and, merger/de-merger are classed as non-forced departures; changes because of poor performance, policy or personality disagreement and scandals are classed as forced departures. In all these cases, no inconsistencies between company announcements and press releases are observed. For 19 departures, no

reason is reported; similar to previous studies these departures are also classified as forced (Weisbach, 1988; Warner et al., 1988).

The remaining departures are classified as forced if information in the FT articles appears consistent with a forced departure. In these cases, FT articles include implicit or explicit comments on: a) poor performance (e.g. 'the new post was one of a series of shake-ups as the company sought to recover from several years of stagnant performance', FT 13/5/98, BODY SHOP); b) on the desire of the City/institutional investors for a new management team (e.g. '...he has come under increasing criticism recently from analysts...', FT 14/8/95, RANK ORGANISATION, '... there was a fairly widespread opinion among the banks that he was not the right man for the job... the banks call all the shots...', FT 23/1/93, BRENT WALKER) and; c) on any conflict between the departuree and the directors' board (e.g. '...they suggested there had been pressure from within the company for the chief executive to step down...', 30/1/97, FIRST LEISURE). Moreover, most of these changes are characterised by the press as 'surprised, unexpected' departures.

On the other hand, departures are classed as non-forced if top managers take prestigious positions elsewhere or are promoted to better positions within the firm (i.e. from CEO to vice-chairman or deputy chairman). In addition, departures from temporary positions (i.e. acting chairman), following the accomplishment of a particular task (e.g. the transformation of the company) or for genuine personal reasons (e.g. '...following his appointment as a minister in the UK's Labour's government', FT 8/5/97-BP AMOCO) are classified as non-forced departures.

In contrast with previous studies that regard all retirements as routine departures, we perform a detailed analysis of this type of change as well. Of critical importance in this analysis is the age of the retiring manager. The mean age of executives described as retiring (a total of 192 observations) is 63, which is the age commonly used in retirement policies. Departees not described as retiring are generally younger; their mean age is 53.7 (a total of 295 observations). Moreover, the p value of the t-statistic for the difference in mean ages of retirees and other departees is 0.00. Consequently, all retiring managers with ages above 63 should be excluded from the forced sample, while all retiring managers with ages below 63 should be included in the forced sample.

However, the classification of retirements into forced and non-forced based on the age variable and only could lead to wrong conclusions. This is why in our analysis we consider not only the age of the departing manager but also: a) the circumstances of the change, b) the destination of the de-

Table 1
Sample firms, all, forced, and non-forced MSE changes by year, time-period: 1990–1998, sample: top 460 London Stock Exchange firms

<i>Year</i>	<i>Number of firms</i>	<i>All changes</i>	<i>Forced changes</i>	<i>Non-forced changes</i>
1990	370	13 (3.5%)	5 (1.4%)	7 (1.9%)
1991	380	37 (9.7%)	18 (4.7%)	18 (4.7%)
1992	376	47 (12.5%)	20 (5.3%)	27 (7.2%)
1993	380	43 (11.3%)	16 (4.2%)	27 (7.1%)
1994	384	34 (8.9%)	16 (4.2%)	18 (4.7%)
1995	391	42 (10.7%)	14 (3.6%)	28 (7.2%)
1996	380	37 (9.7%)	14 (3.7%)	22 (5.8%)
1997	373	45 (12.1%)	20 (5.4%)	25 (6.7%)
1998	355	20 (5.6%)	12 (3.4%)	8 (2.3%)
Total	3,389	318 (9.4%)	135 (4.0%)	180 (5.3%)

Note: Years 1990 and 1998 have lower turnover rates, compared to the rest of the sample years, since they do not represent a full 12-month period.

parting manager, and c) the time period between the announcement and leave date. The following two examples illustrate the above point: a) C. Stein, chairman and MD of Hilton group, retired at the age of 65. If we accept that a normal retirement age is around 63, then this should be a non-forced one. However, C. Stein was forced to retire, following the investors' dissatisfaction with the company's performance. In addition, his retirement was announced in September 1993, only three months before he actually left the group; b) P. Dodd, CEO of Alliance Unichem, retired at the age of 55. If we accept that a normal retirement age is around 63, then this should be a forced one. However, FT articles reveal that this was actually a non-forced and very amicable retirement.

Finally, there are 11 cases for which only limited information is provided. We classify all of these as forced. Since there is a fairly high possibility of misclassification for such cases, we also investigate the sensitivity of turnover to performance after excluding these observations from our analysis. This is further discussed in Section 5.

The above process results in a total of 135 MSE forced departures and 180 MSE non-forced ones (a total of 315 observations).⁹ Given that executive dismissals are a relatively rare corporate event (Furtado and Karan, 1990), the lower incidence of forced departures (43% of the total changes) compared with non-forced departures (57% of the total changes) could be interpreted as evidence of proper classification of MSE turnover. The number of all MSE changes, forced and non-forced changes per year and per company is presented in Table 1.

Compared to the rest of the sample years, 1990 and 1998 have lower turnover rates, since these years do not represent a full 12-month period (i.e. January to December). Management changes, as explained above, are identified by comparing the composition of top management teams across years. The annual period, however, is not a calen-

dar year, but instead September to September. This is because the primary data source (i.e. the *PWC Corporate Register*) was only published semi-annually in pre-1994 (i.e. in September and March of each year), and thus the identification of executive departures by calendar year is not possible. As a result, 1990 represents a fourth-month period (September to December) and 1998 denotes a nine-month period (January to September). That in turn implies that all turnover events prior to September 1990 (starting point) and following September 1998 (end point) are not included in the current analysis.¹⁰

Table 2 presents the reasons given by companies for the job separation as well as the number of forced and non-forced MSE departures by reason.

3.5. Independent variables

Two measures of company performance are used in this study; company stock prices and accounting earnings. As already explained, the return on the company's stock (SHR) is calculated as the log of (RI_{t+1}/RI_t) , where RI stands for Return Index on 1 January. In an efficient market, however, stock prices anticipate the future benefits of the possibility of CEO dismissal and therefore tend to increase as the capital market becomes aware of new avenues for management improvement. As a result, they may under-estimate the monitoring role of internal disciplining devices. Accounting-based measures, on the other hand, are more stable and are not vulnerable to speculative or exogenous shocks (although a counter argument could be

⁹ The three departures – for which no information is found – are excluded from the entire regression analysis.

¹⁰ According to the above, each annual period (for the purpose of turnover identification) overlaps two different calendar years. This, however, does not confound the accuracy and consistency of the study's results, as we are able to locate the actual date of the turnover event and match it against the appropriate annual performance measure.

Table 2
Forced and non-forced MSE changes by stated reason as reported in the *Financial Times*, time-period: 1990–1998, sample: top 460 London Stock Exchange firms

<i>Reasons</i>	<i>Forced changes</i>	<i>Non-forced changes</i>	<i>Total</i>
Retired and left board	10	78	88
Retired and stayed on board	1	11	12
Normal succession	0	11	11
Death	0	5	5
Health/Illness	0	15	15
Policy or personality disagreement	16	0	16
Poor performance	47	0	47
Personal reasons/Other interests	8	8	16
Take position in another firm	1	16	17
Fired	1	0	1
Assume other position in firm	3	11	14
Take-over/Merger	0	12	12
De-merger	0	6	6
Scandal	8	0	8
Other	10	7	17
No clear reason reported	19	0	19
Limited Information	11	0	11
Total	135	180	315

Table 3
Summary statistics of all independent variables, time-period: 1990–1998, sample: top 460 London Stock Exchange firms

<i>Variable</i>	<i>Observations</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min.</i>	<i>Max.</i>
SHR	3296	0.065	0.407	−3.993	1.760
EBIT	2994	0.114	0.126	−1.217	2.458
MSHR	3296	−0.064	0.390	−3.932	1.631
ISHR	3296	−0.028	0.373	−3.964	1.583
IEBIT	2994	0.004	0.123	−1.346	2.309
MV	3366	1981.49	4441.93	0.28	74902.88
SIZE	3366	6.530	1.432	−1.272	11.223
AGE	3356	53.64	6.68	31	81
STAKE	3314	0.023	0.089	0	0.894

Notes:

SHR: Company shareholder return

EBIT: Accounting earnings before interest and taxes standardised by the book value of prior year's total assets

MSHR: Market-adjusted stock returns

ISHR: Industry-adjusted stock returns

IEBIT: Industry-adjusted accounting returns

MV: Market value (£m.)

SIZE: Log of the market value

AGE: Most Senior Executive age

STAKE: The fraction of ordinary stocks owned by the company's Most Senior Executive.

that accounting-based measures are endogenous and susceptible to managerial manipulation).¹¹ Accounting earnings may, therefore, play a significant role in the process of internal governance of companies. Company accounting returns are calculated as the level of accounting earnings before interest and tax (EBIT) standardised by the book value of the firm's total assets in the beginning of the year to control for size differences. Size is

operationalised as the log of the market value of the company. The above data is obtained from Datastream.

In addition to the company's own performance

¹¹ Peasnell et al. (1999, 2000), for example, provide evidence that when the proportion of non-executives is high, managers are less likely to make income-increasing accruals to avoid reporting earnings losses or declines.

measures, the study tests the sensitivity of the results by using relative performance measures. These include: a) market-adjusted stock returns (MSHR), b) industry-adjusted stock returns (ISHR) and c) industry-adjusted accounting earnings (IEBIT). Similar to previous studies (Jensen and Murphy 1990, Huson et al., 2001), market adjusted stock returns are computed as the company's stock return minus a value-weighted return on the common stock of all London Stock Exchange firms. Industry-adjusted stock return and accounting earnings are defined as the company's stock return and accounting earnings respectively minus the median value of the corresponding measure for all firms in the primary one-digit SIC industry in which the firm is active at the time of the turnover.

Managerial ordinary stock ownership is operationalised as the fraction of ordinary shares owned by top managers. Information on the ordinary shares of each company's CEO, chair and MD, and the total number of ordinary shares issued of each company is manually recorded from the September Issues of *PWC Corporate Register* (Companies Section) over the period 1990 to 1998. Company accounts supplement data on managerial stock ownership. The birth dates of the sample's top executives are collected from three sources: a) the *PWC Corporate Register*, b) the Directory of Directors and, c) Companies House. The three-digit industrial classification codes and industry description are recorded based on the company's entry in the *PWC Corporate Register* for September 1995. Descriptive statistics of all the independent variables are given in Table 3.

The mean company shareholder return and accounting return for the sample is 0.065 and 0.114, respectively. The average market-adjusted return is 0.064, while the average industry-adjusted stock returns and accounting earnings are -0.028 and 0.004, respectively. The mean company market value is £1,981m. Finally, the mean age of MSEs is approximately 54 years old, while the mean proportion of ordinary shares owned by the MSE is 0.023.

4. Results and analysis

4.1. Empirical specification

The following Probit model is estimated where Φ is the standard cumulative normal distribution with zero mean and unit variance:

$$\Pr(y_i \neq 0 / x_i\beta) = \Phi(x_i\beta)$$

The term $x_i\beta$ is the probit score, where x contains forcing variables and β is the population vector to be estimated by maximum likelihood methods. The term y is an indicator variable relating to the probability of top management departure. Probit regressions are estimated using three definitions of a management change: a) all MSE changes, b)

forced MSE changes, and c) non-forced MSE changes.¹² A zero (0) indicates a negative outcome, whereas a one (1) represents a positive outcome, i.e. if the senior executive is not disclosed in the firm's top management team in year $t+1$. The X matrix contains proxies for stock-based and accounting-based company performance and managerial stock ownership. Also included are measures of firm size and managerial age, as several studies argue that company size and CEO age are potentially important predictors of the turnover possibility (Warner et al., 1988; Jensen and Murphy, 1990). In addition, all probit models include specific industry and time effects.

4.2. The turnover-performance relation

In this section we evaluate the impact of stock-based and accounting-based performance on the likelihood of a top management change. Table 4 presents our basic probit estimation results on the relation between top management turnover and performance measures. To put our results in economic perspective, the marginal effects rather than the coefficient estimates of the probit model are presented. The derivative of the probability of turnover with respect to a particular regressor illustrates the marginal effect of this regressor (Greene, 2000). Since the marginal effects will vary with the values of x we calculate marginal effects at the mean values of all the variables (Greene, 2000).

Consistent with prior research both in the US and the UK (e.g. Parrino, 1997; Conyon, 1998), poor firm performance increases the probability of executive turnover. In Model 1 we present estimates where we include two lags of own stock return as the independent variables. The marginal increase in the probability of executive turnover and forced turnover for a marginal decrease in stock performance is 0.081 and 0.053, respectively; both estimates are significant at the 1% level. Lag two of stock return is insignificant for both the all changes and forced changes specifications.

In Model 2 we include two lags of EBIT as additional performance variables. The negative marginal effect of the first lag of EBIT (-0.173 for all changes and -0.122 for forced changes) reinforces the previous finding that top managers are dismissed for poor performance. Contrary to stock returns, lag two of accounting returns has a positive marginal effect but is not significant at conventional levels other than in the all changes model. A possible interpretation of the positive significant estimate for the all changes specification is that the

¹² An alternative approach would be to estimate a multinomial logit regression with three turnover outcomes: 0=no change, 1=forced change and 2=non-forced change. Comparing the two models, we found that results are qualitatively identical.

Table 4
Marginal effects of probit models relating MSE turnover to stock-based and accounting-based performance, time-period: 1990–1998, sample: top 460 London Stock Exchange firms

Independent variables	Model 1			Model 2		
	Dependent variables			Dependent variables		
	A (1)	F (2)	NF (3)	A (4)	F (5)	NF (6)
SHR _{t-1}	-0.081 (0.000)	-0.053 (0.000)	-0.005 (0.607)	-0.082 (0.000)	-0.045 (0.000)	-0.018 (0.104)
SHR _{t-2}	-0.016 (0.249)	-0.008 (0.284)	-0.004 (0.706)	-0.007 (0.632)	-0.000 (0.984)	-0.007 (0.548)
EBIT _{t-1}	—	—	—	-0.173 (0.003)	-0.122 (0.001)	0.003 (0.936)
EBIT _{t-2}	—	—	—	0.093 (0.079)	0.008 (0.808)	0.050 (0.126)
SIZE	-0.003 (0.356)	-0.001 (0.471)	-0.000 (0.936)	-0.000 (0.835)	0.000 (0.808)	0.000 (0.847)
AGE	0.003 (0.000)	-0.000 (0.865)	0.003 (0.000)	0.004 (0.000)	0.000 (0.778)	0.003 (0.000)
Time effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3039	3037	3037	2828	2826	2826
Pseudo R ²	0.066	0.101	0.071	0.075	0.115	0.082
Log Lik.	-848.9	-439.4	-560.1	-785.2	-408.4	-514.2

Notes:

SHR_{t-1}: Company shareholder return during year t-1

SHR_{t-2}: Company shareholder return during year t-2

EBIT_{t-1}: Accounting earnings before interest and taxes standardised by the book value of total assets in year t-1

EBIT_{t-2}: Accounting earnings before interest and taxes standardised by the book value of total assets in year t-2

SIZE: Log of the market value

AGE: Most Senior Executive age

The marginal effect of variable X_i for the probit model is calculated as: $\partial \text{Turnover} / \partial X_i = \phi(\bar{x}\beta) * \beta_i$, where $\phi(\cdot)$ is the standard normal density, \bar{x} denotes the mean values of the explanatory variables and β_i is the coefficient estimate of X_i .

A: All Most Senior Executive changes; F: Forced changes; NF: Non-forced changes
p-values in parentheses

turnover probability will increase by 0.080 (-0.173+0.093) if there is a unit decrease in the level of prior year's accounting earnings and by 0.093 if there is a one unit decrease in the growth of prior year's accounting earnings.¹³ Finally, the inclusion of accounting earnings in Model 2 does not alter the effect of the prior year returns variable which remains negative and significant under both all changes and forced changes.

As mentioned earlier, the effectiveness of the internal control mechanisms can be assessed by

comparing forced departures with non-forced departures. The estimates of all performance measures in the non-forced turnover models in columns 3 and 6 reveal that, in contrast with forced top executive changes, there is no evidence of significant relation between the likelihood of non-forced departure and performance. Instead non-forced departures are driven mainly by the age variable which enters with a positive sign (0.003) and is significant at 1% level.

Up to now the models have only included lagged measures of firm performance. However, executive turnover events may also be associated with contemporaneous performance. For example, the recent executive changes at Marconi might suggest that they were a direct result of current period's performance than that in the previous one or two years. To test this, we re-estimate Model 2 from Table 4 including current stock returns,

¹³ The general turnover model: $\text{Pr}(\text{MSE Turn}_{it}) = a + \beta_1 \Pi_{it-1} + \beta_2 \Pi_{it-2} + \beta_3 \text{Size}_{it} + \beta_4 \text{Age}_{it} + e_{it}$, can be re-written as: $\text{Pr}(\text{MSE Turn}_{it}) = a + (\beta_1 + \beta_2) \Pi_{it-1} - \beta_2 (\Pi_{it-1} - \Pi_{it-2}) + \beta_3 \text{Size}_{it} + \beta_4 \text{Age}_{it} + e_{it}$, where Π is a measure of profit. Hence, the sum of β_1 and β_2 estimates the effect of a change in prior year's level of profit whilst β_2 estimates the effect of a change in prior year's difference in profit.

Table 5
Actual and predicted turnover rates of all, forced and non-forced MSE changes, time period: 1990–1998, sample: top 460 London Stock Exchange firms

Panel A: By decile of annual shareholder returns (SHR_{t-1})

Decile	Observations	Mean	All changes		Forced changes		Non-forced changes	
			ATR	PTR	ATR	PTR	ATR	PTR
1	320	-0.671	0.184	0.186	0.134	0.128	0.050	0.060
2	320	-0.212	0.156	0.111	0.084	0.048	0.071	0.056
3	320	-0.081	0.106	0.097	0.053	0.038	0.053	0.054
4	320	0.010	0.081	0.091	0.031	0.033	0.047	0.053
5	320	0.086	0.071	0.084	0.028	0.031	0.043	0.050
6	320	0.158	0.068	0.077	0.012	0.026	0.056	0.049
7	320	0.231	0.087	0.073	0.015	0.026	0.071	0.046
8	320	0.309	0.062	0.065	0.012	0.020	0.047	0.044
9	320	0.409	0.078	0.058	0.018	0.016	0.059	0.045
10	320	0.660	0.053	0.043	0.012	0.012	0.040	0.035

Panel B: By decile of annual accounting returns ($EBIT_{t-1}$)

Decile	Observations	Mean	All changes		Forced changes		Non-forced changes	
			ATR	PTR	ATR	PTR	ATR	PTR
1	300	-0.078	0.159	0.150	0.096	0.112	0.063	0.046
2	300	0.037	0.150	0.109	0.096	0.055	0.053	0.049
3	300	0.067	0.093	0.096	0.050	0.039	0.043	0.052
4	300	0.087	0.106	0.091	0.040	0.035	0.066	0.051
5	300	0.105	0.100	0.087	0.043	0.032	0.056	0.050
6	300	0.123	0.106	0.086	0.043	0.029	0.060	0.053
7	300	0.143	0.050	0.075	0.010	0.024	0.040	0.048
8	300	0.167	0.040	0.073	0.003	0.022	0.033	0.049
9	300	0.201	0.076	0.068	0.013	0.019	0.063	0.048
10	300	0.346	0.066	0.050	0.010	0.010	0.056	0.048

Notes:

SHR_{t-1} : Company shareholder return during year $t-1$

$EBIT_{t-1}$: Accounting earnings before interest and taxes standardised by the book value of total assets in year $t-1$

Decile 1 stands for the worst performers whereas decile 10 stands for the best performers

Mean probabilities of Most Senior Executive all, forced and non-forced changes are computed using probit estimates from the complete Model 2, Table 4, columns 4, 5 and 6 respectively

ATR: Actual turnover rate; PTR: Predicted turnover rate

beginning on 1 January and running up to a month prior to the announcement of the departure. Our results are qualitatively unchanged. For example, the marginal effect of current year's share performance on the likelihood of forced departures is -0.043 and significant at less than the 1% level while the estimates of lagged performance measures are broadly consistent with those previously reported.

An alternative to the probit specification would be to use a logit specification. From a theoretical perspective, it is difficult to justify the choice of one formulation over the other (Greene, 2000). Overall, the two approaches are quite comparable, the main difference being that the logit formulation has slighter flatter tails. To check that our turnover-performance results are not simply an artefact of the probit estimation technique, we re-estimate Model 2 of Table 4 using a logit estima-

tion procedure and find similar results. For example, the marginal effect of prior year's stock performance and accounting returns on forced MSE turnover is -0.049 and -0.135 respectively; both estimates are significant at the 1% level.¹⁴ Again, the data reveal no association between non-forced departures and firm performance.

4.3. The turnover likelihood over ranges of corporate performance

The impact of firm performance on executive changes is further explored by investigating whether different levels of performance have a

¹⁴ The marginal impact of variable X_1 for the logit model is calculated as: $\partial \text{Turnover} / \partial X_1 = \beta_1 * (1-p) * p$, where p is the observed forced MSE turnover rate and β_1 is the logit coefficient estimate of X_1 . In results not reported here, it is found that β equals -1.359 and -3.704 for SHR_{t-1} and $EBIT_{t-1}$ respectively while p equals 0.038.

different effect on top management turnover. In particular, we assign each firm to a decile based on the full nine-year period SHR_{t-1} and $EBIT_{t-1}$. Within its decile, the mean actual turnover rate of all types of MSE changes (i.e. all changes, forced changes and non-forced changes) is calculated. In addition, we perform more rigorous econometric exploration. First, we calculate the implied probabilities of MSE turnover based on the probit estimates from the complete Model 2 in Table 4. The probabilities for all changes are computed using column 4, the probabilities for forced changes are computed using column 5 and the probabilities for non-forced changes are computed using column 6. We then sort these probabilities into the performance deciles. Finally, implied probabilities are averaged within each decile.

Actual and predicted turnover rates by decile are presented in Table 5; panels A and B contain the results for stock returns and accounting returns respectively. Mean own stock return for the previous year (SHR_{t-1}) ranges from -0.671 in the bottom decile (1) to 0.660 in the top decile (10). Mean accounting earnings for the previous year ($EBIT_{t-1}$) range from -0.078 in the bottom decile (1) to 0.346 in the top decile (10). As shown, the frequency of all MSE departures and forced MSE departures declines significantly from the bottom performance decile to the top performance decile under both performance measures. In contrast, the frequency of non-forced turnover does not vary significantly across different performance deciles. Descriptive results, therefore, suggest that only very poor levels of performance affect the turnover rate and in particular, the dismissal rate.

Consistent with the unconditional frequencies, predicted probabilities of turnover also reveal that unless performance is very poor the turnover possibility is not significantly high. When performance is measured by prior year own stock return, the mean predicted turnover rate declines from 0.186 for the group of worst performers to 0.043 for the group of best performers in all Most Senior Executive changes (Panel A). In addition, top managers in the worst performing firms are predicted to be about 10.6 times more likely to be forced out as top managers in firms of the best performers; in contrast, managers of the worst performing companies are predicted to be about only 1.7 times as likely to voluntarily depart as top managers of the best performing companies.

Similar results are obtained when performance is measured by prior year accounting return (Panel B). The implied probabilities of removal decline

from 0.150 to 0.050 for all MSE changes and from 0.112 to 0.010 for forced changes whereas predicted probabilities of non-forced turnover are relatively constant across different performance deciles. Overall, these probability estimates suggest that internal control mechanisms seem to be effective in monitoring and replacing inefficient managers; performance levels however, need to be very poor for internal monitors to take disciplinary action.

4.4. The turnover-performance relation over time

The specification in Table 4 assumes that the relation between management turnover and performance is the same for the entire period 1990–1998. However, the sensitivity of turnover to performance may vary across different time periods. Some prior UK work has addressed this issue and concentrates on the impact of the Cadbury Report's recommendations (Dedman 2000; Dahya et al., 2002). These papers divide the sample into two periods: before and after 1992. The turnover-performance relation is then estimated for each sub-sample. However, sub-samples contain two contrasting periods of general economic performance in the UK: the pre-Cadbury window is associated with a recessionary period and the post-Cadbury period is associated with higher growth and improved economic performance. Moreover, both of the studies yield inconclusive results on the temporal stability of the management turnover-performance relation.

Accordingly, we depart from these papers by providing a broader test of the time effect on the sensitivity of turnover to performance. In particular, there have been claims that in the presence of global product market competition investors and boards are expecting increasingly superior CEO performance. Secondly, competition for CEOs may have also increased as the pool of available capable successors has expanded. Finally, recent research documents that during 1989–1997 cash compensation for UK CEOs has grown 10% annually (Conyon and Murphy, 2000); this rapid CEO remuneration increase is likely to have raised the expectations of directors and investors. We investigate these claims by evaluating the impact of firm performance on top management turnover in two sub-samples. In particular, we split the sample into two periods; the first one includes sample years 1991 to 1993 inclusive compared to years 1994 to 1997.¹⁵ Again, firm size and director age are used as control variables. Specific industry and time effects are also incorporated in the model. We then check the sensitivity of this by choosing a different performance window, namely, 1991–1992 versus 1993–1997.

Table 6 presents the results of this analysis. As shown, we find that executive turnover is nega-

¹⁵ We exclude 1990 and 1998 from this analysis as they do not denote a full 12-month period for turnover. The aim of this test is to evaluate the time effect on the turnover-performance relation; consequently, we should include only those sample years that are comparable.

tively and significantly correlated with both stock-based and accounting-based performance only during the period 1994–1997. In particular, during 1994–1997 the marginal effect of prior year shareholder return in the case of all changes is -0.134 , while the marginal effect of accounting earnings is -0.185 ; estimates are significant at 1% and 5% level respectively. In contrast, changes in both stock returns and accounting earnings do not affect the turnover possibility in the period 1991–1993. Moreover, we report a negative and significant effect of share prices decline on the possibility of a non-forced departure during 1994–1997. Results, therefore suggest that managers are more likely to voluntarily depart nowadays compared with yesterday. A plausible explanation could be that as stock options are increasingly becoming a major component of executive compensation, CEOs of poorly performing companies choose to leave office and seek for another employer as the value of their total wealth is declining.

When the dependent variable of the model is forced changes results are mixed. The marginal effect of prior year stock returns is more negative in the period 1994–1997 than in 1991–1993 (-0.054 as opposed to -0.034). On the other hand, the marginal effect of prior year accounting earnings is more negative in the period 1991–1993 than in 1994–1997 (-0.204 as opposed to -0.128). In both cases, however, the difference between the two effects is not statistically significant; the p-value of the χ^2 -statistic for the difference in the estimates is 0.250 for stock returns and 0.316 for accounting earnings.

The above evidence, combined with the fact that there is no particular time-series pattern in the actual CEO turnover rates by year (see Table 1), suggests that CEOs are not more likely to be dismissed for poor performance. That is, the disciplining effect of poor performance for this sample of companies and this time period has not become stronger over time.

Table 6
Marginal effects of probit models relating MSE turnover to stock-based and accounting-based performance over time, time-period: 1991–1997, sample: top 460 London Stock Exchange firms

Independent variables	Dependent variables		
	All changes (1)	Forced changes (2)	Non-forced changes (3)
SHR _{91–93}	–0.034 (0.165)	–0.034 (0.009)	0.026 (0.303)
SHR _{94–97}	–0.134 (0.000)	–0.054 (0.000)	–0.064 (0.002)
EBIT _{91–93}	–0.187 (0.105)	–0.204 (0.001)	0.011 (0.856)
EBIT _{94–97}	–0.185 (0.019)	–0.128 (0.004)	–0.008 (0.880)
SIZE	–0.005 (0.221)	0.000 (0.858)	–0.003 (0.247)
AGE	0.004 (0.000)	–0.000 (0.887)	0.004 (0.000)
Time Effects	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes
Observations	2334	2332	2332
Pseudo R ²	0.060	0.103	0.071
Log Lik.	–738.1	–375.6	–496.5

Notes:

SHR_{91–93}: Prior year's company shareholder return over the period 1991–1993

SHR_{94–97}: Prior year's company shareholder return over the period 1994–1997

EBIT_{91–93}: Prior year's accounting earnings before interest and taxes standardised by the book value of total assets over the period 1991–1993

EBIT_{94–97}: Prior year's accounting earnings before interest and taxes standardised by the book value of total assets over the period 1994–1997

SIZE: Log of the market value

AGE: Most Senior Executive age

The marginal effect of variable X_i for the probit model is calculated as: $\partial \text{Turnover} / \partial X_i = \phi(\bar{x}\beta) * \beta_i$, where $\phi(\cdot)$ is the standard normal density, \bar{x} denotes the mean values of the explanatory variables and β_i is the coefficient estimate of X_i .

p-values in parentheses

This is consistent with US evidence reported by Huson et al. (2001) but in contrast with that of Mikkelsen and Partch (1997) and Murphy (1999). Specifically, Huson et al. (2001) suggest that internal governance structures are equally effective in removing poorly performing CEOs across four sub-periods; 1971–1976, 1977–1982, 1983–1988, and 1989–1994. In contrast with the above, Mikkelsen and Partch (1997) and Murphy (1999) conclude that the relation between management turnover and firm performance has declined since the 1980s. Specifically, Murphy shows that in the S&P 500 industrials a negative CEO turnover–performance correlation can be established for the period 1980 to 1989. However, for the latter period 1990 to 1995 there is no relationship between CEO turnover and net of market returns. Similar, Mikkelsen and Partch report no relation between accounting performance and top executive turnover during 1989–1993 as opposed to a negative and significant relation during 1984–1988. In both studies, however, the authors do not differentiate by the type of turnover.

The results established so far complement previous UK papers (Dedman 2000; Dahya et al., 2002). But, to provide further comparability between our paper and the above studies we split the observations into two separate windows: 1991–1992 and 1993–1997. We then re-estimate the models in Table 6. This analysis indicates that for forced MSE changes, the marginal effect of prior year stock returns is more negative in 1993–1997 than in 1991–1992 (i.e. -0.049 and -0.031 respectively). Moreover, the marginal effect of prior year accounting earnings is less negative in 1993–1997 than in 1991–1992 (i.e. -0.127 and -0.257 respectively). In both cases, however, the difference in the estimates is statistically insignificant indicating that the disciplining effect has not changed following the Cadbury Report. The above results are broadly similar to those of Dedman (2000) and Dahya et al. (2002) who also fail to report evidence of a stronger turnover–performance relation following the publication of the Cadbury code.¹⁶ Nevertheless, a direct comparison is not possible,

as findings are highly dependent on the empirical framework adopted.¹⁷

Finally, it is worth commenting on the robustness of the study's findings. More specifically, the results remain broadly the same irrespective of the partitioning strategy. That is, we find that the disciplining effect of top executives has not strengthened over the time even if the sample is split into 1991–1994 and 1995–1997.

4.5. Executive stock ownership and turnover

A related issue is that executive shareholdings may have consequences for the likelihood of CEO turnover. Large equity ownership can insulate top executives from internal monitoring efforts either through the voting control with which it is associated or through the correlation between equity ownership and other conditions conducive to managerial entrenchment, such as status within the firm (Morck et al., 1988). In general, managerial ownership may make it more difficult to remove a manager from office. In this section we test the impact of managerial stock ownership on the turnover likelihood, by adding to the baseline probit equations (see Table 4) the STAKE variable.

Columns 1–3 of Table 7 report the marginal effects of the regression of turnover on stock ownership under all changes, forced changes and non-forced changes. As shown, a one unit increase in managerial stock ownership decreases the likelihood of executive turnover by 0.27, the forced change possibility by 0.09 and the non-forced departure probability by 0.16; estimates are significant at 1% and 5%. Prior year share performance and accounting performance measures remain negative and significant for both all changes and forced departures. The results suggest that although stock ownership may serve to align the interests between shareholders and managers, it is also negatively related to CEO turnover.

However, the interpretation of this negative correlation between CEO turnover and equity stakes is open to two competing explanations. On the one hand high ownership stakes entrench management and make it difficult for the corporate board to remove them. This is the entrenchment view. On the other hand large equity stakes reduce agency costs and so we would expect to see less turnover in companies where the CEO holds a significant equity stake. In other words, the higher the managerial stock ownership the lower the need for disciplining top managers, as they themselves become shareholders and are penalised by the declining value of their wealth.

The real point is whether senior executives are less likely to be fired for poor corporate performance when they have a significant share stake. We discriminate between the two views by evaluating the turnover–performance relation in two sub-sam-

¹⁶ In particular, Dedman (2000) finds that the disciplining effect has not changed following the Cadbury Report when performance is measured by accounting earnings whilst results regarding the turnover–performance relation are inconclusive when performance is measured by stock returns. Dahya et al. (2002) report a stronger turnover–performance association following the publication of the Cadbury Code but this effect is not robust (i.e. it disappears when they incorporate additional explanatory variables).

¹⁷ For example, Dahya et al. (2002) perform their analysis by using three sub-samples, i.e. companies that: a) are always in compliance with the Cadbury Report, b) are never in compliance with the Cadbury Report and, c) adopt the Cadbury recommendations.

Table 7
Marginal effects of probit models predicting the relation between MSE turnover and stock ownership as well as the intervening effect of stock ownership on the turnover- performance association, time-period: 1990–1998, sample: top 460 London Stock Exchange firms

Independent variables	Model 1			Model 2		
	Dependent variables			Dependent variables		
	A (1)	F (2)	NF (3)	A (4)	F (5)	NF (6)
SHR _{t-1}	-0.073 (0.000)	-0.042 (0.000)	-0.013 (0.228)	-0.070 (0.001)	-0.044 (0.000)	-0.009 (0.586)
SHR _{t-2}	-0.000 (0.970)	0.002 (0.815)	-0.003 (0.793)	-0.000 (0.998)	0.001 (0.853)	-0.002 (0.848)
EBIT _{t-1}	-0.161 (0.005)	-0.119 (0.001)	0.009 (0.797)	-0.065 (0.336)	-0.043 (0.288)	-0.000 (0.999)
EBIT _{t-2}	0.091 (0.074)	0.011 (0.734)	0.047 (0.124)	0.088 (0.075)	0.004 (0.878)	0.049 (0.115)
STAKE	-0.279 (0.002)	-0.096 (0.039)	-0.163 (0.024)	-0.254 (0.004)	-0.085 (0.052)	-0.150 (0.028)
D _{Median}	—	—	—	0.000 (0.723)	0.003 (0.660)	-0.010 (0.346)
D _{Median} *SHR _{t-1}	—	—	—	-0.004 (0.871)	0.000 (0.968)	-0.006 (0.758)
D _{Median} *EBIT _{t-1}	—	—	—	-0.134 (0.133)	-0.099 (0.060)	0.019 (0.774)
SIZE	-0.003 (0.318)	0.000 (0.987)	-0.001 (0.470)	-0.005 (0.144)	-0.000 (0.736)	-0.003 (0.280)
AGE	0.004 (0.000)	0.000 (0.685)	0.003 (0.000)	0.004 (0.000)	0.000 (0.593)	0.003 (0.000)
Time effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2793	2791	2791	2793	2791	2791
Pseudo R ²	0.081	0.113	0.092	0.083	0.118	0.093
Log Lik.	-762.8	-399.5	-496.0	-760.8	-397.1	-495.3

Notes:

SHR_{t-1}: Company shareholder return during year t-1

SHR_{t-2}: Company shareholder return during year t-2

EBIT_{t-1}: Accounting earnings before interest and taxes standardised by the book value of total assets in year t-1

EBIT_{t-2}: Accounting earnings before interest and taxes standardised by the book value of total assets in year t-2

SIZE: Log of the market value

AGE: Most Senior Executive age

STAKE: The fraction of ordinary stocks owned by the company's Most Senior Executive.

D_{Median} is a dummy indicator equal to one (1) if STAKE is above the median value (i.e. 0.0003) and zero (0) otherwise.

The marginal effect of variable X_i for the probit model is calculated as: $\partial \text{Turnover} / \partial X_i = \phi(\bar{x}\beta) * \beta_i$, where $\phi(\cdot)$ is the standard normal density, \bar{x} denotes the mean values of the explanatory variables and β_i is the coefficient estimate of X_i.

A: All Most Senior Executive changes; F: Forced changes; NF: Non-forced changes
p-values in parentheses

ples. Specifically, we interact both prior year stock returns and accounting returns with an indicator variable (D_{Median}) that takes the value one (1) if MSE stock ownership is above the median (i.e. 0.0003) and zero (0) otherwise. If managers do become entrenched at high levels of stock ownership we should expect to see a less negative effect of

performance on turnover when equity ownership is above the median, i.e. we should expect to see a positive estimate on the interaction terms.

Columns 4–6 in Table 7 present the marginal effects of the interaction term of D_{Median} with lagged share performance and accounting performance. As shown, under all and non-forced turnover the

estimates of the interaction variables are not only insignificant but also display the opposite sign of that predicted (with the exception of the estimate of $D_{\text{Median}}^* \text{EBIT}_{t-1}$). Similarly, when the dependent variable is forced MSE turnover, the interaction term with prior year share performance is both economically and statistically insignificant. Interestingly, the marginal effect of previous year accounting earnings is more negative (and significant at the 10% level) if MSE stock ownership is above than below the median ($-0.142 = -0.043 - 0.099$ as opposed to -0.043). Overall, therefore we conclude that there is no strong evidence supporting the claim of managerial entrenchment in companies with high levels of equity stake owned by top managers.

The results are broadly in line with the conclusions reached by Dahya et al. (1998) who, based on UK data report that there is no evidence of managerial entrenchment effects at high ownership levels (e.g. above 5%). They do, however, document evidence of an entrenchment effect at low ownership levels (e.g. below 1%). In order to increase the results' comparability we replicate their analysis. More specifically, we classify all observations into three managerial stock ownership categories: a) below or equal to 1%, b) between 1% and 5% and, c) above or equal to 5%. Then we re-run Model 2 in Table 4 by including two of the above categorical ownership variables (i.e. a and c) as well as their interaction terms with prior year stock returns. Results (not tabulated here), indicate that none of the above estimates is significant at conventional levels. Again, all and forced departures are inversely and significantly associated with prior year firm performance whereas there is no such association in the case of non-forced MSE changes. Hence, in contrast to Dahya et al. (1998), we find no evidence that CEOs become entrenched at low ownership levels.¹⁸

5. Additional robustness tests

In this section we report additional tests that assess the robustness of our baseline results. All models provide standard errors that have a stationary covariance matrix. This adjustment is made using the White (1980) method. Results, however, could be biased for at least two reasons: a) misclassification of top executive changes and b) the use of prior year stock returns and accounting earnings as the appropriate performance measures.

5.1. Misclassification of executive changes

As already mentioned in Section 3, there are 11 cases of executive changes for which information provided is limited. Consequently, it may be the case that we have misclassified these changes as forced. We re-run Model 2 of Table 4 excluding these observations. Baseline results are identical.

The marginal effect of prior year stock returns is -0.076 for all changes and -0.040 for forced departures. Both estimates are significant at 1% level. The estimate for prior year accounting earnings is -0.163 for all changes and -0.110 for forced changes ($p < 0.01$). Finally, non-forced departures are driven mainly by age, which enters with a positive sign 0.003 and significant at 1% level.¹⁹

5.2. Alternative measures of performance

We test the robustness of our findings by using alternative performance measures. As Cyert and March (1963) argue, firms do not only use their own prior performance in deciding whether or not to replace top executives; they also incorporate the performance of competing firms. Therefore, if the firm's performance is appreciably lower than that of several competitors, the company will replace its top manager more readily than would be the case if the firm was performing similarly to its competitors.

We explore the above by using relative performance measures. These include: a) prior year market-adjusted stock return, b) prior year industry-adjusted stock return, and c) prior year industry-adjusted accounting earnings. We re-run Model 2 of Table 4 using these alternative performance measures. Results are qualitatively identical under all alternative performance benchmarks. Lag one of market-adjusted and industry-adjusted stock returns, as well as industry-adjusted accounting earnings, are negative and significant in all changes and forced departures. Lag two of returns and earnings are not significant. Again, there is no association between firm performance and non-forced departures, which are driven mainly by age. Finally, none of these measures provide additional explanatory power over results presented in Table 4.

6. Conclusion

This paper has examined top executive turnover in a sample of the top 460 UK companies over the period 1990–1998. Our empirical results are based on hand-collected data over a whole decade such

¹⁸ For a more comprehensive discussion of Dahya et al. (1998) see Young (1998).

¹⁹ In a similar vein, executive changes due to merger/takeovers are classified as non-forced. To the extent that external monitoring mechanisms (e.g. the market for corporate control) and internal disciplining devices (e.g. directors) are complements, a case could be made for classifying these departures as forced. Re-running Model 2 of Table 4, after the above re-classification, results in almost identical findings. The marginal effect of prior year's stock returns and accounting returns under forced changes is -0.048 and -0.120 respectively; both estimates are significant at less than the 1% level. Similar to base-line results, non-forced departures are not linked with firm performance.

that we can discriminate between forced and non-forced departures. The size and quality of the sample allows us to provide a more powerful test of the turnover-performance association.

Our main contributions are to extend the management turnover-performance governance literature in the following ways. First, we considered the top executive turnover performance relation and the ranges over which performance had to fall to trigger a senior management turnover. Consistent with previous studies both in the US and the UK, the econometric evidence reveals a robust inverse relation between top executive turnover and pre-dated firm performance: senior managers are dismissed (replaced) for poor performance. Our results suggest that directors use shareholder returns in monitoring and disciplining top managers while financial accounting information may also play an important role in the process of internal governance. We found that the likelihood of dismissal for poor performance was only evidenced in companies where there was a forced change. Routine or non-forced changes had no relation to corporate performance.

Second, we examined the range over which top executive turnover and performance extended. We found that an actual executive forced turnover rate in the median deciles of stock performance was about 3%. For poor performance, representing returns of negative 67% to stockholders, the turnover rate was about 13%. It seems that performance must fall considerably to significantly increase the actual management dismissal rate. These results were also confirmed within our econometric results.

Third, we examined the time series heterogeneity in the top executive turnover performance relationship. In particular, we were interested in whether the turnover and corporate performance relation had become more negative over time. This could come about due to increased demands on managerial performance as a result of the intense product market and CEO competition and the significant growth of CEO compensation. However, the results of empirical analysis failed to identify any strong evidence of a change in the performance relation between 1991 to 1993 and 1994 to 1997. It would appear that the disciplining effect has not become stronger over time.

Finally, we examined the effects of share stakes in the management turnover process. We found that there was a negative correlation between executive turnover and management equity holdings. On the one hand this might represent entrenchment, the ability of managers to resist a job separation, due to their ownership stake. On the other, it may reflect reduced agency costs and less of a need to remove managers in companies where they have a large equity stake. The real point though is

whether senior executives are replaced for poor corporate performance. We found that the turnover – performance relation was no different in firms where the top executive had a high equity stake compared with the firms where the equity share stake was low. In consequence, there is no strong evidence suggesting that managers become entrenched at high levels of equity ownership.

Overall, this paper adds to the governance literature by documenting the circumstances under which poor performance can lead to a top management job separation. In summary, we found that corporate performance has to be particularly bad to force a managerial job-separation. There is little evidence that managers are disciplined more for poor corporate performance today than in the earlier years. And finally, top executives with large equity stakes are as likely to be fired for poor performance as those with low equity stakes.

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Capital budgeting, valuation and personal taxes

Ian M Dobbs and Anthony D Miller*

Abstract—This paper examines the relationship between before tax and after tax valuation and uses this to examine the literature on capital budgeting and capital structure in the presence of corporate and personal taxes, a literature which features a bewildering array of valuation formulae. Some of the variation between such formulae naturally arises out of variations in underlying model assumptions; however, in several cases, it arises because there are (by no means obvious) internal inconsistencies. The potential magnitude of the errors that might arise in a capital budgeting context is then explored through sensitivity analysis.

1. Introduction and review of the literature

For many years the Value Additivity Principle (VAP) has provided the cornerstone for the valuation of complex assets within a setting of perfect capital markets. Under this principle, a portfolio can be correctly valued by breaking it into its constituent assets, independently valuing each asset, and then adding the resulting values together (Haley and Schall [1973]). Applied to the theory of capital structure,¹ where the focus is on the interaction between an investment decision and its financing, the VAP prescribes that the value of a levered investment should be equal to the value of an otherwise-identical unlevered investment plus the value of incremental cash flows attributable to leverage. Modigliani and Miller [1963] presented a seminal model in which debt created a valuable incremental corporation tax shield. In addition to assigning a value to this tax shield, Modigliani and Miller (MM) derived an adjusted discount rate (ADR) which could be used to compute the value of a levered investment without *explicit* consideration of the incremental cash flows arising from leverage. This ADR subsequently found a place in conventional textbook accounts of capital budgeting procedures as the weighted average cost of capital (e.g. Brealey and Myers [1996], Buckley et al. [1998]). MM's specific results, however, were based upon a number of restrictive assumptions, including (a) that there are no personal taxes, (b) that operating cash flows conform to a specific and permanent stable pattern, and (c) that the level of

debt is fixed and permanent.

The work of MM was subsequently generalised in a number of different ways. Miller [1977] and DeAngelo and Masulis [1980] discussed the value of corporation tax shields in a world with personal taxation, while Miles and Ezzell [1980], retaining the assumption of no personal taxation, derived an ADR for *any* pattern of operating cash flows. Strictly speaking, the Miles-Ezzell result is *not* a full generalisation of MM's earlier result, because the Miles-Ezzell financing policy, a so-called Active Debt Management Policy (ADMP), and the MM financing policy, assumption (c) above, are in general mutually conflicting.² Concurrent with the above developments were attempts to integrate the Capital Asset Pricing Model (CAPM) of Sharpe [1964], Lintner [1965] and Mossin [1966] with MM's model of capital structure.³ This raised interesting issues for multi-period capital budgeting, for as well as the MM restrictions outlined above, use of the 1-period CAPM implied further, and possibly contradictory, restrictions.⁴

Following this early work, researchers have striven to synthesize these various strands with the objective of furnishing a realistic yet practical approach to capital budgeting and, in particular, the valuation of arbitrary risky multi-period cash flows. Clubb and Doran [1991, 1992], Appleyard and Strong [1989], Strong and Appleyard [1992] and Taggart [1991] all employ the Miles-Ezzell ADMP to derive formulae relevant to the valuation

*The authors are, respectively, reader in Business Economics and Finance, and lecturer in Accounting and Financial Management in the Department of Accounting and Finance, University of Newcastle upon Tyne. Correspondence should be addressed to Dr I. M. Dobbs at the Department of Accounting & Finance, University of Newcastle, Newcastle upon Tyne, NE1 7RU. Tel: +44 (0)191 222 6544. E-mail: I.M.Dobbs@newcastle.ac.uk

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¹ For a useful survey of capital structure research outside the perfect capital markets setting, see Harris and Raviv [1991].

² Moreover, both financing policies were assumed merely for analytical convenience. Neither has normative force.

³ See, for example, Hamada, [1972].

⁴ For example, the Sharpe-Lintner-Mossin CAPM was derived under an assumption that investors have a one-period investment horizon. Fama [1970, 1977] outlined sufficient conditions for the validity of this one-period CAPM in a multi-period investment context. See also Merton [1973] for a discussion of the same issue in a continuous time setting.

of a levered asset with an arbitrary pattern of operating cash flows, and all authors allow for non-zero personal taxes. Yet, despite the broadly common framework adopted by these authors, inspection of their results reveals a bewildering variety of valuation formulae. This paper demonstrates that discrepancies and inconsistencies can arise, and indeed, have arisen, in models that incorporate personal taxation. However, before presenting a more formal analysis, the following stylised example may help to clarify what is at issue with the conventional valuation procedures used in some of the capital budgeting and valuation literature.

Consider a risky cash flow, which will be received next period. Suppose its current expected value is £100 before personal taxes (*BT*) and, say, £95 after personal taxes (*AT*). Given these figures, the implied effective tax rate is 5%.⁵ Let the equilibrium *AT* discount rate for cash flows belonging to this risk class be 10%. The conventional method of valuation would compute the present value by discounting the expected *AT* cash flow at the *AT* discount rate, giving a correct value (current market price) for this cash flow of $£100(1-0.05)/1.1 = £95/1.1 = £86.3636$. An alternative method of valuation would specify an equilibrium risk-adjusted *BT* discount rate to be applied to the expected *BT* cash flow. How should this rate be determined? In much of the above literature, it is assumed that there is a well-defined relationship between the two kinds of discount rate and the tax rate – namely, following Miller [1977], that

$$r = \rho / (1 - \tau^*), \quad (1)$$

where r is the equilibrium *BT* discount rate, ρ is the equilibrium *AT* discount rate and τ^* is the effective tax rate. This specification applied to the above numerical example would give the *BT* rate as $r = 0.1 / (1 - 0.05) = 0.10526$ and a value for the cash flow of $£100 / 1.10526 = £90.4762$. The discrepancy between the *AT* valuation of £86.3636 and the *BT* valuation of £90.4762 (an error of about 5%) clearly indicates that the relationship encapsulated in equation (1) cannot be generally correct. In fact, if the market value of the cash flow was indeed £86.3636 as indicated by the *AT* analysis, correct valuation using a *BT* discount rate r would require that this *BT* rate be given by

$$86.3636 = \frac{100}{1+r} \Rightarrow r = 0.15789.$$

Thus, the correct *BT* discount rate is a whole five percentage points above the rate calculated in (1).⁶ Furthermore, if the example is modified slightly by lengthening the time before the cash flow will be received to two periods, with no other changes, then its value (based on an *AT* analysis) is $£100(1-0.05)/1.1^2 = £95/1.1^2 = £78.5124$. If

£78.5124 is in fact the market value of the risky cash flow, the implicit value for the *BT* rate r to give this answer is

$$78.5124 = \frac{100}{(1+r)^2} \Rightarrow r = 0.12858,$$

a rate which differs from the period-1 *BT* rate calculated above. These calculations thus demonstrate that the relationship between *BT* and *AT* rates and taxation is generally more complex than implied by the simple ‘grossing up’ procedure in equation (1) and that this relationship is affected by the time to maturity of the expected cash flow. Note that these conclusions have been reached without any assumption being made about the precise tax regime, and despite the fact that the parameters of the problem are held constant when time to maturity is lengthened.

The object of this paper is to identify the relationship between before and after personal tax discount rates and to show how the relationship is generally a non-linear function of the timing of the cash flow (as illustrated in the above numerical example). Having done this, the paper then addresses the above literature to see to what extent it deals adequately with these relationships – and hence whether or not the observed differences in valuation formulae arise out of differences in assumptions – or simply out of internal incoherence in model assumptions.

Section 2 sets out the basic framework which is then used to investigate the above literature, generally referred to below as ‘the surveyed works’, which deals with personal taxes. Specifically, Section 3 focuses on the case of the level perpetuity (as dealt with in Miller [1977]) while Section 4 deals with the literature concerned with the valuation of arbitrary finite cash flows (Clubb and Doran [1991, 1992], Appleyard and Strong [1989], Strong and Appleyard [1992] and Taggart [1991]). Section 5 then examines the magnitude of the error implied if the simple ‘grossing up’ rule is used, and Section 6 draws together the main conclusions.

⁵ For example, this would be the result if the marginal rate of income tax was 5% and the capital gains tax rate was zero. However, note that the details of the tax regime – and hence of how the effective tax on a cash flow arises – are of no importance in this paper – so long as there are *some* tax effects. The concern in this paper is purely with the problem of how to conduct consistent before- and after-tax valuation analysis.

⁶ And of course, valuation errors associated with individual cash flows may also be magnified in an overall calculation of net present value. To illustrate, suppose the above effective tax rate (5%) and an *AT* discount rate of 10% apply and that a project involved an initial outlay of £90 (*BT*) to generate the above period one *BT* expected cash flow of £100. The correct net present value is thus $-£90 + £86.3636 = -£3.6364$ whilst the *AT* valuation would be $-£90 + £90.4762 = +£0.4762$. In this example, not only would the project be accepted on this incorrect calculation, but the valuation error would be over 100%.

2. Personal taxes and discount factors

The standard approach adopted in the literature to valuing an asset is to (a) estimate the expected future cash flows the asset will generate, (b) specify a discount factor for each of these cash flows, and (c), invoking the value additivity principle (VAP), sum the discounted expected cash flows to obtain a single numerical value. However, when taxation is charged at the personal level, it is possible to pursue a ‘before personal taxes’ calculation of value or an ‘after personal taxes’ calculation of value. That is,

- (i) to work with the set of expected gross cash flows i.e. before personal taxes have been deducted (*BT*), – and use *BT* discount rates in performing the valuation calculation, or
- (ii) to work with the set of expected net cash flows i.e. after personal taxes have been deducted (*AT*) – and use *AT* discount rates.

Since the market value of any given investment is a unique number, it follows that, in a given model, it should make no difference which approach is adopted. That is, starting with a given set of *BT* (*AT*) project cash flows, calculating value using *BT* (*AT*) discount rates should give the same value as that from first computing *AT* (*BT*) cash flows and then computing value using the *AT* (*BT*) discount rates. Indeed this is such an important property, it is worth stating more formally.

Lemma 1: A necessary condition for the validity of using both the *BT* and *AT* valuation approaches within a model is that the two approaches must assign an identical market value to any given asset.

As will be seen shortly, Lemma 1 implies the existence of definite relationships between the discount factors used in the *BT* and *AT* approaches to valuation.

Table 1
Basic notation

Cash flows and values

- X_t : The *BT* actual cash flow received in period T .
- χ_t : An *AT* cash flow received in period t .
- V_t : Market value at time t of x_T (equivalently, the market value of the future after tax cash flow profile $\{\chi_{t+1}, \chi_{t+2}, \dots, \chi_T\}$ which is generated by x_T).

Expectations

- $E_t(x_T)$: Expectation at time t of x_T ($s \leq t \leq T$) (note $E_T(x_T) = x_T$).
- $E_t(\chi_{t+1})$: Expectation at time t of χ_{t+1} . ($s \leq t \leq T$).
- $E_t(V_{t+1})$: Expectation at time t of V_{t+1} . ($s \leq t \leq T$).
- $E_s(V_t)$: Expectation (at time s) of market value V_t at time t of the risky cash flow x_T to be received at time T ($s \leq t \leq T$) ($E_t(V_t) = V_t$).

NB: T is used exclusively for the timing of receipt of a *BT* cash flow, subscript s is reserved for the ‘present’ time at which expectations are formed and for which closed expressions for the value of x_T will be derived (working backward from $s=T$ through to $s=0$), while the subscript t is used as a time counter running between s and T .

Risk

- β : A risk parameter measuring per-period variability of future expectations. $\beta=f$ denotes the riskless case.

Discount factors and discount rates

- $\pi_{\beta t}$: A one-period *AT* discount factor; the market value (at time t) per unit of $E_t(\chi_{t+1})$ as a function of its risk.
- $\rho_{\beta t}$: A one-period *AT* discount rate
- $p(\beta, s, t)$: A multi-period *BT* discount factor; the market value at time s per unit of $E_s(x_T)$ as a function of its risk β .
- $r(\beta, T)$: The spot *BT* discount rate appropriate for discounting a time T *BT* cash flow to time 0.

To proceed, focus upon the valuation of a single risky *BT* cash flow x_T ⁷ payable after T periods. For convenience, Table 1 gathers together a list of the principle notation used in what follows. The analysis is more conveniently presented in terms of discount *factors* rather than discount *rates*. However, given the results obtained for factors, corresponding results in terms of discount rates can be obtained by using the following definitional relationships:

$$p(\beta, 0, T) \equiv \frac{1}{(1+r(\beta, T))^T} \Rightarrow r(\beta, T) = p(\beta, 0, T)^{-1/T} - 1, \quad (2)$$

$$\pi_{\beta} \equiv \frac{1}{1+\rho_{\beta}} \Rightarrow \rho_{\beta} = (1/\pi_{\beta}) - 1. \quad (3)$$

The following assumptions are made:

- (A1) The rate of personal tax levied on x_T is τ and this is a constant over time and is payable without time lag.
- (A2) Nominal capital gains/losses, whether realised or unrealised, are taxed at the rate of τ_g , again constant over time and payable without time lag.
- (A3) The per-period risk of $E_t(x_T)$, $0 \leq s < t \leq T$, is known for certain and constant over time (i.e. β is a constant).
- (A4) $E_s(x_T)$, ($0 \leq s \leq T$) is known for certain at time s , as are all tax rates and discount factors.
- (A5) $\pi_{\beta} = \pi_{\beta}$ ($\forall \beta, \forall t \geq 0$).
- (A6) $0 \leq \tau, \tau_g < 1$ and $0 < \pi_{\beta} < \pi_T < 1$.

These assumptions provide an analytical framework consistent with the surveyed literature, which deals with valuation in the presence of personal taxes. One can, of course, debate whether the above assumptions provide a realistic or useful basis for valuing assets. However, this lies outside the scope of the present paper, which is concerned solely with capital budgeting and valuation within the framework already established in the literature – and in particular with clarifying the extent to which the above literature properly accounts for the implied relationship between *BT* and *AT* discount factors. Nevertheless, some brief remarks concerning A1–A6 may be of interest.

Assumptions A1, A3–A6 are explicit or trivially implicit in all of the surveyed works. Assumption A4 is one of a set of sufficient conditions permitting use of the single-period *CAPM* in a multi-period valuation context.⁸ Assumptions A1, A3 and A5 are standard and widely used simplifying assumptions (see Fama [1977] and, especially, Myers and Turnbull [1977]). A6 merely imposes that taxes are non-negative and less than 100%, and that the risky discount rate is greater than a riskless one and that both are positive.

The main assumption used here which is less

than obvious in the literature is A2. This assumption entails that, for a single positive cash flow receivable at time T , there will be a stream of CGT payments in each period prior to T , followed by a reclaim of CGT at time T (since on payment of the cash flow, the market value of the asset falls to zero, so there is a capital loss). Clubb and Doran [1992] explicitly make this assumption, and in their [1991] paper, set $\tau_g = 0$, so this is also consistent with A2 as a special case. The remaining literature contains little discussion of taxation bases, but in all cases there is an explicit assumption that there is an average or overall 'equity tax rate' τ^* which is constant over time for all assets (whatever their risk). It is possible to show that a necessary and sufficient condition for this to be the case within these models is that $\tau = \tau_g$; that is, the assumption of a constant effective equity tax rate requires that dividend and CGT rates are equal and constant over time in these models (the proof is given in Appendix A1). Since the rate $\tau^* > 0$ is applied to each and every cash flow in a multi-period cash flow, this also entails our assumption A2, namely that capital gains tax is payable on all changes in market value whether or not capital gains are realised.⁹

What values the personal tax rates might take is naturally an empirical question, although from a theoretical perspective, the relevant rates are those associated with the 'marginal investor' (Miller [1977]).¹⁰ Given such rates can only be estimated, it is often useful to study the sensitivity of valuation results to variation in such tax parameters; this kind of analysis is conducted in Section 5 below.

Under assumptions A1–A6, the relationship between *BT* and *AT* discount factors is established in the following proposition:

⁷ Focusing upon a *single* cash flow involves no loss of generality for, given the *VAP*, it is permissible to value each individual cash flow out of a set of cash flows independently of the others in the set. Proposition 1, which follows, thus holds for each cash flow associated with a complex asset. Furthermore, analogous propositions might be developed for multiple cash flows considered jointly. See, for example, Proposition 2 below.

⁸ For the other sufficient conditions, see Fama [1977].

⁹ As well as being necessary for modelling the surveyed work, this assumption, A2, is of interest in its own right because of its non-distortionary properties. By contrast, it is well known that, if CGT is payable only on realisation, this leads to 'lock in' effects (the desire to hold appreciating assets to defer and so reduce the present value of CGT payments). Although tax authorities often limit the associated tax arbitrage opportunities by imposing loss-offset limits, these in turn distort investment choices away from more risky investments (Stiglitz [1969]). It is for these reasons that there are now arguments for introducing a mark-to-market form of CGT system (Shakow [1986]), and in a recent article, Auerbach [1991] develops an operational form for this.

¹⁰ For the complications induced by tax clientele effects, see for example Elton and Gruber [1970], Miller and Scholes [1978], Litzenberger and Ramaswamy [1982].

Proposition 1: Assumptions A1–A6 imply the following necessary and sufficient condition for internally consistent valuation of any given *BT* risky cash flow x_T at any given time T ; that the *BT* and *AT* discount factors must be related by the formula

$$p(\beta, 0, T) = \left(\frac{1-\tau}{1-\tau_g} \right) \left(\pi_\beta \frac{(1-\tau_g)}{(1-\pi_f \tau_g)} \right)^T.$$

Proof: See Appendix A2
Writing

$$k(\tau, \tau_g) = (1-\tau)/(1-\tau_g), \quad (4)$$

and

$$a(\pi_f, \tau_g) = \frac{(1-\tau_g)}{(1-\pi_f \tau_g)} \quad (5)$$

(and suppressing arguments for the functions k and a in what follows), the result can be written more compactly as

$$p(\beta, 0, T) = k(a\pi_\beta)^T. \quad (6)$$

The full proof for Proposition 1 is completed in Appendix A2. However, to get an understanding for the processes involved, the first steps are detailed here. Given an arbitrary risky *BT* cash flow, x_T , this can be valued directly, using the *BT* discount factor, or by first converting to *AT* cash flows and then applying appropriate *AT* discount factors. By Lemma 1, the *BT* and *AT* approaches are mutually consistent only if they give the same market valuation – thus equating the market valuations by these alternative approaches establishes the above relationship between *BT* and *AT* discount factors.

The *BT* Approach:

Under the *BT* approach there is just one expected cash flow, $E_0(x_T)$. Invoking the VAP and using the discount factor $p(\beta, 0, T)$, the present value is simply

$$V_0 = p(\beta, 0, T)E_0(x_T). \quad (7)$$

The *AT* Approach:

Given assumptions A1 and A2, payment of x_T gives rise to a stream of *AT* cash flows χ_t from period 1 all the way through to period T as illustrated in Table 2.

The cash flows arise here because there is a capital gain/loss which is taxed at the rate τ_g whenever the market value of the time T cash flow changes (its market value naturally changes as T is approached). In the final period T , the cash flow x_T is itself taxed, at the rate τ .

Invoking the VAP, each element of this set of *AT* cash flows is now valued, with V_0 being given by the sum of these valuations. Notice that, with $\tau_g \neq 0$, each *AT* cash flow χ_t also involves valuations

(namely V_t and V_{t-1}). Such values may be computed recursively, working backwards from $s=T$ through $s=0$, as follows.

Derivation of V_t at $s=T$

Since $\chi_s=0$ for all $t>T$, it follows trivially that $V_T=0$.

Derivation of V_t at $s=T-1$

The market value V_{T-1} is the sum of (discounted) future cash flows expected at time $T-1$. In valuing the cash flows in Table 2, it is important to distinguish the risk associated with each element, and to value each using the appropriate discount factor (the risky or riskless discount factor). Row T of Table 2 gives the (period T) *AT* cash flow as $\chi_T = x_T(1-\tau) - \tau_g[V_T - V_{T-1}]$. As previously noted, $V_T=0$. Viewed from period $s=T-1$, $x_T(1-\tau)$ is a risky cash flow, whilst $\tau_g V_{T-1}$ is known for certain (from A3, A4). The $s=T-1$ expected value of the former is thus discounted using the one-period risky discount factor, π_β , while the latter is valued using the one-period riskless discount factor π_f (by A5). Hence,

$$V_{T-1} = \pi_f \tau_g V_{T-1} + \pi_\beta (1-\tau) E_{T-1}(x_T). \quad (8)$$

Solving for V_{T-1} gives

$$V_{T-1} = [\pi_\beta (1-\tau) E_{T-1}(x_T)] / [1 - \pi_f \tau_g]. \quad (9)$$

Using (4) and (5), this becomes simply

$$V_{T-1} = k a \pi_\beta E_{T-1}(x_T), \quad (10)$$

where k , a and π_β are known for certain (by A4).

Derivation of V_s at $s=T-2$

V_{T-2} equals the sum of (discounted) future cash flows (from periods $T-1$ and T) expected at $s=T-2$. At time $t=T-1$ there are two cash flows; $-\tau_g V_{T-1}$ and $\tau_g V_{T-2}$. Viewed from time $s=T-2$, the term $\tau_g V_{T-2}$ is riskless, so is valued at time $T-2$ using the riskless

Table 2
***AT* cash flows generated by a single *BT* cash flow at time T**

Time t	<i>AT</i> cash flow, χ_t
0	$\chi_0=0$
1	$\chi_1=-\tau_g [V_1-V_0]$
2	$\chi_2=-\tau_g [V_2-V_1]$
...	...
...	...
$T-2$	$\chi_{T-2}=-\tau_g [V_{T-2}-V_{T-3}]$
$T-1$	$\chi_{T-1}=-\tau_g [V_{T-1}-V_{T-2}]$
T	$\chi_T=x_T(1-\tau) - \tau_g [V_T-V_{T-1}]$
$T+1$	0
$T+2$	0
...	...

factor π_f . The cash flow $-\tau_g V_{T-1}$ viewed from time $T-2$ is risky; from (10), V_{T-1} is simply a constant multiplied by $E_{T-1}(x_T)$, so, by assumptions A3 and A5, the appropriate one-period discount factor for valuing this term is π_β .

There are also two non-zero cash flows arising at time T , namely $\tau_g V_{T-1}$ and $(1-\tau)x_T$. To obtain the present values for these, their $s=T-2$ expected values must be discounted two periods. The first cash flow, $\tau_g V_{T-1}$, is a random variable, which from (10) is a scalar multiple of $E_{T-1}(x_T)$ up until time $T-1$, and thereafter is known for certain. Hence the two-period discount factor for $\tau_g E_{T-2}(V_{T-1})$ is $\pi_\beta \pi_f$. The second cash flow, $(1-\tau)x_T$, is a random variable, with risk β in each period (assumption A3). The two-period discount factor for $(1-\tau)E_{T-2}(x_T)$ is therefore π_β^2 .

Adding the values for $t=T-1$ and $t=T$ cash flows,

$$V_{T-2} = \pi_f \tau_g V_{T-2} - \pi_\beta \tau_g E_{T-2}(V_{T-1}) + \pi_\beta \pi_f \tau_g E_{T-2}(V_{T-1}) + \pi_\beta^2 (1-\tau) E_{T-2}(x_T), \quad (11)$$

so, solving for V_{T-2} gives

$$V_{T-2} = \left[(\pi_f - 1) \pi_\beta \tau_g E_{T-2}(V_{T-1}) + \pi_\beta^2 (1-\tau) E_{T-2}(x_T) \right] / [1 - \pi_f \tau_g]. \quad (12)$$

To simplify equation (12) further, note that, by the law of iterated expectations (see e.g. Hamilton [1994: 742]), for any arbitrarily chosen cash flow, x_T , $E_s(E_t(x_T)) = E_s(x_T)$ for all s, t, T such that $0 \leq s \leq t \leq T$. Now, using (9),

$$E_{T-2}(V_{T-1}) = E_{T-2} \left[\left[\pi_\beta (1-\tau) E_{T-1}(x_T) \right] / [1 - \pi_f \tau_g] \right] = \left[\pi_\beta (1-\tau) E_{T-2}(x_T) \right] / [1 - \pi_f \tau_g] \quad (13)$$

Substituting into (12) then gives

$$V_{T-2} = \frac{\left[(\pi_f - 1) \pi_\beta \tau_g \left\{ \frac{\pi_\beta (1-\tau) E_{T-2}(x_T)}{[1 - \pi_f \tau_g]} \right\} + \pi_\beta^2 (1-\tau) E_{T-2}(x_T) \right]}{1 - \pi_f \tau_g}, \quad (14)$$

which simplifies to give

$$V_{T-2} = k (a\pi_\beta)^2 E_{T-2}(x_T). \quad (15)$$

Derivation of V_s at $s=0$

Equations (10) and (15) suggest a pattern to the value equation of the form

$$V_{T-i} = k (a\pi_\beta)^i E_{T-i}(x_T) \text{ for } i=1, 2, \dots, T, \quad (16)$$

and this is formally established in appendix A2. Setting $i=T$, this implies

$$V_0 = k (a\pi_\beta)^T E_0(x_T). \quad (17)$$

By Lemma 1, the right hand sides of equations (7) and (17) must be equal, hence, cancelling through by $E_0(x_T)$ gives the proposition 1 result that

$$p(\beta, 0, T) = k (a\pi_\beta)^T. \quad (18)$$

Proposition 1 shows that A5, the assumption of time-invariant one-period AT discount factors (respectively, time invariant AT discount rates), is not in general compatible with a similar assumption concerning one-period BT discount factors (respectively, time invariant BT discount rates). That is, it is not in general possible to write $p(\beta, 0, T) = p(\beta, 0, 1)^T \forall T > 0, \forall \beta$; this is possible only in the special case where $\tau = \tau_g$:

Corollary: Under assumptions A1–A6, a necessary and sufficient condition for $p(\beta, 0, T) = p(\beta, 0, 1)^T \forall T > 0, \forall \beta$, is that $\tau = \tau_g$.

Proof:

Given $p(\beta, 0, T) = k (a\pi_\beta)^T$, then $p(\beta, 0, T) = p(\beta, 0, 1)^T \forall T > 0, \forall \beta$, if and only if $p(\beta, 0, 1) = k^{1/T} (a\pi_\beta)$ which is true for all $T > 0$ if only if $k=1$. However $k = (1-\tau)/(1-\tau_g)$, and $k=1 \Leftrightarrow \tau = \tau_g$. ■

Thus, when dealing with arbitrary finite risky cash flow profiles, a valuation procedure within the scope of assumptions A1–A6 cannot additionally assume both $\tau \neq \tau_g$ and $p(\beta, 0, T) = p(\beta, 0, 1)^T$, ($\forall T > 0, \forall \beta$) without violating Proposition 1. A time-invariant one-period discount factor is equivalent to a flat term structure in one-period discount rates. The above analysis therefore shows that, when $\tau \neq \tau_g$, assuming flat term structures for both BT and AT rates is, within the framework (A1–A6), logically inconsistent.¹¹ This point is taken up again in Section 4 below.

Many papers focus on rates of return rather than discount factors, so it is worth translating (18) into this format, using equations (2) and (3). This gives

$$\frac{1}{(1+r(\beta, T))^T} = \left(\frac{1-\tau}{1-\tau_g} \right) \left[\frac{(1-\tau_g)(1+\rho_f)}{(1+\rho_\beta)(1+\rho_f-\tau_g)} \right]^T. \quad (19)$$

As in the Corollary to Proposition 1, clearly $r(\beta, T)$ (is a constant for all $T \geq 1$ if and only if $\tau = \tau_g$).

Equation (18) illustrates the precise relationship between (i) the multi-period BT discount factor, $p(\beta, 0, T)$, (ii) the one-period AT discount factor for any given risk class β , (iii) the discount factor for the riskless asset, (iv) the timing of receipt of the BT cash flow, and (v) rates of personal taxation.

¹¹ To the best of our knowledge, there has been no explicit discussion in the literature on equity valuation of the complex relationships between AT and BT term structures. For work on the term structure of interest rates in bond markets, see Livingston [1979], Kim [1990] and Kryzanowski, Xu and Zhang [1995].

The first order partial derivatives of $p(\beta, 0, T)$ with respect to τ, τ_g are (Appendix A3 gives derivations)

$$\partial p(\beta, 0, T) / \partial \tau = -p(\beta, 0, T) / (1 - \tau), \quad (20)$$

$$\partial p(\beta, 0, T) / \partial \tau_g = \frac{p(\beta, 0, T)([1 - \pi_f \tau_g] - T(1 - \pi_f))}{(1 - \tau_g)(1 - \pi_f \tau_g)}. \quad (21)$$

Intuitively, one might expect that the higher the tax rate, the greater is the personal tax burden associated with each unit of BT cash flow, x_T , and the lower is the unit present value, $p(\beta, 0, T)$. Given A6, (20) is indeed strictly negative. By contrast, (21) is strictly negative if and only if

$$T > (1 - \pi_f \tau_g) / (1 - \pi_f). \quad (22)$$

That is, when $T < (1 - \pi_f \tau_g) / (1 - \pi_f)$, CGT actually raises the time zero market value of a positive cash flow received at time T . The intuition for this is perhaps easiest seen if we consider the case of a single positive riskless cash flow. In this case, the market value necessarily increases as T is approached, so there are CGT payments to be made in each period until the last, in which the value falls to zero, and CGT can be reclaimed. In the absence of discounting, the sum of the capital gains would in fact be a capital loss equal to the initial value of the asset. Thus, in the absence of discounting, the overall impact of CGT would necessarily be to increase the market value of the asset. Given there is discounting, and given the CGT claimed back occurs at time T , it follows that the larger T is, the more heavily this benefit is discounted, and so the more likely it becomes that the impact of CGT is no longer beneficial.^{12,13}

Having spent some time discussing the role of CGT, it is worth emphasising that the non-linearity in the transformation from AT to BT discount factors does not disappear when CGT is zero. This point has already been made in our numerical example in Section 1. More formally, it can be seen by setting $\tau_g = 0$ in (19). This then simplifies to give

$$\frac{1}{(1 + r(\beta, T))^T} = \frac{(1 - \tau)}{(1 + \rho_g)^T} \Rightarrow 1 + r(\beta, T) = (1 + \rho_g)(1 - \tau)^{-1/T} \quad (23)$$

That is, if $\tau > 0$ while $\tau_g = 0$, $r(\beta, T)$ continues to be a non-linear function of T , and so, even if $\tau_g = 0$, it is not possible to assume that both BT and AT term structures are flat.

3. Level perpetuities and the Miller [1977] model

The (risky) level perpetuity is an important special case where a simpler relationship between BT and AT discount factors exists. This perpetuity offers

risky BT cash payments, x_T for $T=1, \dots, \infty$. It is characterised by the condition $E_0(x_T) = \bar{x}$, a constant, for all $T > 0$. The level perpetuity is assumed to have a constant level of 'riskiness' (or 'homogeneous' risk) in the sense that the time-invariant per-period risk of each expected cash flow is a constant β across all expected cash flows making up the perpetuity. However, note that a risky level perpetuity is level only in the sense that time zero expectations of the risky future cash flows are constants. Its value will actually fluctuate randomly as time passes. The procedure for valuing the risky level perpetuity is exactly the same as for any arbitrary set of cash flows; each cash flow is valued separately, and then the values are summed. It is worth emphasising that every cash flow in the risky perpetuity gives rise to a stream of capital gains/losses as per Table 2 – so it follows, a fortiori, that there is a stream of capital gains tax cash flows associated with such a perpetuity.¹⁴

3.1 The perpetuity valuation formula

Let $p_{perp}(\beta)$ denote the present value of this level perpetuity per unit of \bar{x} as a function of its risk and $r_{perp}(\beta)$ be the 'quasi-discount rate' that correctly values this perpetuity. Thus, $p_{perp}(\beta)$ and $r_{perp}(\beta)$ are defined by the equation

$$V_0 = p_{perp}(\beta) \bar{x} \equiv \bar{x} / r_{perp}(\beta). \quad (24)$$

Then it follows that

Proposition 2: Assumptions A1–A6 imply the following necessary and sufficient condition for internally consistent valuation of a homogeneous-risk level perpetuity:-

¹² More formally, inspection of Table 2 indicates that the capital gains tax saving at time T , $(\tau_g(V_{T-1} - V_T) = \tau_g V_{T-1})$, is greater in absolute magnitude than the total of capital gains tax payments from $t=1$ through $T-1$, $(\sum_{t=1}^{T-1} \tau_g(V_t - V_{t+1}) = \tau_g(V_{T-1} - V_0))$. But when receipt of this tax saving is sufficiently distant (large T) and/or the time discounts are sufficiently large, the total present value of the stream of expected capital gains tax cash flows will be negative. Then, since the payment of capital gains tax reduces present value, the higher is τ_g , the lower is $p(\beta, 0, T)$.

¹³ Focusing on a single cash flow thus seems to suggest that investors would want to lobby to increase the CGT rate in this framework. However that is not the case, because many of the assets that concern investors are perpetual and growing assets for which CGT is indeed a burden. This is explained in detail in Section 4 below.

¹⁴ That is, while $E_0(x_T) = \bar{x}$ for all $T > 0$, $E_t(x_T)$, for $0 < t \leq T$ will generally differ from \bar{x} . The same is true of the value of the risky perpetuity. Here the value at time zero is calculated. The value of the perpetuity at time 1 will generally differ from that at time 0; indeed, if value at time 1 did not, then it would not be a risky perpetuity. Hence as a matter of logic, the cash flows associated with the risky perpetuity, and the value of the perpetuity must fluctuate over time – the perpetuity therefore must give rise to capital gains tax cash flows. For a more complete analysis of the evolution of expectations over time, see Fama [1977].

$$p_{perp}(\beta) = \frac{k(a\pi_\beta)}{(1-a\pi_\beta)} = \left(\frac{1-\tau}{1-\tau_g} \right) \left(\frac{\pi_\beta(1-\tau_g)}{1-\pi_\beta-\tau_g(\pi_f-\pi_\beta)} \right).$$

Equivalently,

$$r_{perp}(\beta) = \frac{1}{p_{perp}(\beta)} = \frac{\rho_\beta - \tau_g \left(\frac{\rho_\beta - \rho_f}{1 + \rho_f} \right)}{1 - \tau}.$$

Proof: Under the *AT* approach, the value of a homogeneous risk level perpetuity is obtained by using (17) and the *VAP*. Since in this case, $E_0(x_T) = \bar{x}$, $\forall T > 0$, it follows that

$$V_0 = \sum_{t=1}^{\infty} k(a\pi_\beta)^t E_0(x_t) = k\bar{x} \sum_{t=1}^{\infty} (a\pi_\beta)^t = k\bar{x} \frac{a\pi_\beta}{1-a\pi_\beta}. \quad (i)^{15}$$

Under the *BT* approach, the value of the β -risk level perpetuity is

$$V_0 = p_{perp}(\beta)\bar{x}. \quad (ii)$$

Invoking the Lemma, equating the right hand sides of (i) and (ii), and solving for $p_{perp}(\beta)$ gives

$$p_{perp}(\beta) = k(a\pi_\beta)/(1-a\pi_\beta). \quad (iii)$$

Expanding, using the definitions for a , k and (24) (and using (3) to obtain discount rates) then gives the above results. ■

Notice, from (iii) and (18), that if $k=1$ (i.e. if $\tau=\tau_g$), then

$$p_{perp}(\beta) = p(\beta, 0, 1)/[1-p(\beta, 0, 1)]. \quad (25)$$

In other words; the unit present value of a β -risk level perpetuity will be a simple function of the nearest *one-period* β -risk *BT* discount factor. In terms of rates of return, since $p(\beta, 0, 1) = 1/[1+r(\beta, 1)]$, this gives the familiar discounting rule – that when $\tau=\tau_g$, the value of the risky level perpetuity is simply the *BT* expected cash flow divided by the *BT* one period discount rate; that is, the *BT* valuation rule is simply

$$V_0 = \bar{x}/r(\beta, 1). \quad (26)$$

However, it must be stressed that this holds only if $k=1$; that is, only if $\tau=\tau_g$.

Notice also, from Proposition 2, for a riskless perpetuity, since $\beta=f$, it follows that

$$r_{perp}(f) = \rho_f/(1-\tau). \quad (27)$$

That is, the ‘quasi-discount rate’ to correctly value a *BT* riskless level perpetuity is simply the

‘grossed up’ *AT* discount rate. Also, for a risky level perpetuity, if the capital gains tax rate is zero, then, from Proposition 2,

$$r_{perp}(\beta) = \rho_\beta/(1-\tau), \text{ (if } \tau_g = 0 \text{)}. \quad (28)$$

That is, the value of a level risky *BT* perpetuity can be calculated using the simple ‘grossed up’ after tax discount rate. A simple ‘grossed up’ *AT* discount rate works in this case because the level perpetuity is a special case. One might surmise that when tax rates are equal ($\tau=\tau_g$), a similar result might be had. This is **not** the case however; when $\tau=\tau_g$, the formula only simplifies as far as

$$r_{perp}(\beta) = \frac{1}{p_{perp}(\beta)} = \frac{\rho_\beta - \tau \left(\frac{\rho_\beta - \rho_f}{1 + \rho_f} \right)}{1 - \tau}. \quad (29)$$

The simple time-independent ‘grossing up’ of the *AT* discount rate cannot be carried over to the case of non-level, finite cash flow profiles, even in special cases where $\beta=f$ and/or $\tau_g=0$. To see this, note that, for the riskless case, from (19) with $\beta=f$,

$$\frac{1}{(1+r(f, T))^T} = \left(\frac{1-\tau}{1-\tau_g} \right) \left(\frac{1-\tau_g}{1+\rho_f-\tau_g} \right)^T, \quad (30)$$

while the case with $\tau_g=0$, from (19), gives

$$\frac{1}{(1+r(\beta, T))^T} = (1-\tau) \left(\frac{1}{1+\rho_\beta} \right)^T. \quad (31)$$

With both $\beta=f$ and $\tau_g=0$, (19) gives

$$\frac{1}{(1+r(f, T))^T} = (1-\tau) \left(\frac{1}{1+\rho_f} \right)^T. \quad (32)$$

Thus in all these cases, the transformation from *AT* to *BT* is a non-linear function of the time to receipt of the cash flow.

3.2. Why CGT can ‘add value’

In the special case of the level perpetuity, Proposition 2 shows that there is a strictly positive relationship between the capital gains tax rate and market value when the perpetuity is risky, $\rho_\beta > \rho_f$; that is,

$$p_{perp}(\beta) = \frac{1-\tau}{\rho_\beta - \tau_g \left(\frac{\rho_\beta - \rho_f}{1 + \rho_f} \right)} \Rightarrow \frac{\partial p_{perp}(\beta)}{\partial \tau_g} > 0. \quad (33)$$

¹⁵ Note, from (5) and A6, that the term $a\pi_\beta$ satisfies $0 < a\pi_\beta < 1$, so the geometric sum converges.

Readers of an earlier version of the paper found this result rather puzzling (and 'counter-intuitive'). For this reason it is worth examining it in more detail. A useful way to do so is to examine the case where the perpetuity features a constant expected growth rate g (which could be zero as a special case). Consider the result of buying such a risky perpetuity and selling it after one period. The cash flows that arise are as follows:

Table 3
Cash flows for a one period buy and sell strategy

Time period:	Cash flow
0	$-V_0$ (initial payment)
1	\tilde{V}_1 (sale at market value, a random variable)
1	$-(\tilde{V}_1 - V_0)\tau_g$ (CGT payment)
1	$\tilde{x}_1(1-\tau)$ (receipt of \tilde{x}_1 and payment of tax on it)

The claim against initial value in the CGT payment, $V_0\tau_g$, is riskless and so must be discounted at the riskless rate; all the other elements of the return are risky and so are discounted at ρ_β . Hence, defining $\bar{x}_1 = E_0(\tilde{x}_1)$ and $\bar{V}_1 = E_0(\tilde{V}_1)$, then in equilibrium

$$V_0 = \frac{\bar{V}_1 + \bar{x}_1(1-\tau) - \bar{V}_1\tau_g}{1+\rho_\beta} + \frac{V_0\tau_g}{1+\rho_f} \quad (34)$$

The expected cash flows, and hence expected values, grow at the rate g (as in Gordon's dividend growth valuation model), so

$$\bar{x}_1 = E_0(\tilde{x}_1) = (1+g)^{-1}\bar{x}_1 \Rightarrow \bar{V}_1 = E_0(\tilde{V}_1) = (1+g)^{-1}V_0 \quad (35)$$

Using this to substitute for \bar{V}_1 in (34) (and rearranging) gives the valuation formula

$$V_0 = \frac{(1-\tau)\bar{x}_1}{\rho_\beta - g - \tau_g \left(\frac{\rho_\beta - \rho_f}{1+\rho_f} - g \right)} \quad (36)$$

As before (Proposition 2), when $g=0$, increases in CGT add value. The intuition for this can be seen by inspection of the cash flows at time period 1 in Table 3. From (35), notice that $E_0(\tilde{V}_1 - V_0) = \bar{V}_1 - V_0 = gV_0$; thus if $g=0$, the expected value at time 0 of CGT payments at time 1 is zero. However, if $g=0$, the *present value* of this CGT tax payment is negative; this arises because the allowance against the opening balance V_0 is riskless and so is discounted less heavily than the risky CGT payment on \tilde{V}_1 . To spell this out,

$$PV(CGT) = \frac{E_0(\tilde{V}_1)\tau_g}{1+\rho_\beta} - \frac{V_0\tau_g}{1+\rho_f} = \frac{(1+g)V_0\tau_g}{1+\rho_\beta} - \frac{V_0\tau_g}{1+\rho_f} \quad (37)$$

which is clearly negative when $g=0$. Hence CGT raises value for the level risky perpetuity case.

Of course, the more usual case is that of values which are expected to increase over time. The above analysis demonstrates that if g is sufficiently positive, increasing CGT will reduce value. From (36),

$$g \gtrless \frac{\rho_\beta - \rho_f}{1+\rho_f} \Rightarrow \partial p_{\text{perp}}(\beta) / \partial \tau_g \gtrless 0 \quad (38)$$

Thus, as one would expect, when capital gains are anticipated and g is sufficiently positive, CGT reduces value. By contrast, if growth is negative, then capital losses are anticipated, and in this case, increasing CGT increases the amount clawed back in tax, and hence increases initial market value. These observations explain why, in practice, most investors would prefer a lower (zero) rather than a higher CGT rate. Most equity investments are expected to be growing, albeit risky, perpetuities (rather than finite sets of cash flow), and this is precisely the case where there is a CGT burden reducing market value.

3.3. Perpetuities in the Miller model

In the Miller [1977] model, whether or not gearing adds value is assessed in the context of a market equilibrium for corporate debt. Equilibrium in the market for debt involves the rate of interest on debt being bid up to the point where the marginal investor, who has a particular tax-paying status, is indifferent as to whether she holds identical risk securities after all tax obligations are met (the firm's stocks or bonds, in this case). This accords with the analysis of this paper (as in Propositions 1 and 2).

The Miller [1977] debt and taxes paper deals with a special case for simplicity – specifically, it features riskless and permanent debt along with a risky operating cash flow perpetuity. There are no taxes on equity, and a single time invariant investor specific tax rate is used for 'income from bonds' (Miller [1977:267]: denoted τ_{PB}^α in that paper). The rate r_0 in that paper denoted the 'equilibrium rate of interest on fully tax exempt bonds' (p. 268). It is therefore not only the *BT* discount rate for the latter, but also the *AT* discount rate for all investors and for all riskless securities. In equilibrium, the *BT* price of a taxable riskless bond must have adjusted to the point where the *AT* riskless return for the marginal investor (the ' α -investor' paying tax at the rate τ_{PB}^α) equals r_0 . That is, in equilibrium,

$$r_d(B)(1 - \tau_{PB}^\alpha) = r_0, \quad (39)$$

where $r_d(B)$ denotes the inverse demand function for debt. Thus, (39) implies the rate of interest on debt is bid up to the point where, in equilibrium,

$$r_d(B) = \frac{r_0}{1 - \tau_{PB}^\alpha}. \quad (40)$$

This formulation corresponds to the result established in Proposition 2 above for a level riskless perpetuity. It does not, of course, hold for arbitrary finite cash flow profiles, where the *BT* rates, which ensure *AT* equilibrium are more complex (as indicated in Proposition 1).

Miller [1977] does also briefly consider the risky perpetuity case, but says little about how the relationship between *BT* and *AT* rates is changed for this case, commenting 'Default risk can be accommodated... by merely reinterpreting all the before-tax interest rates as risk adjusted or certainty equivalent rates.' (p. 271) This appears to suggest that the simple 'grossing-up' procedure above remains valid for moving from *AT* to *BT* interest rates when dealing with risky bonds. However, the above analysis shows that this is not correct – except, of course, for the special case of the *level* risky perpetuity when the rate of taxation on capital gains is zero (as in equation (28)).

Recall that in the Miller [1977] model, τ_{PB}^α is used as the rate of taxation for 'income from bonds'. Income includes cash disbursements and capital gains. For the level riskless perpetuity, there are no capital gains, hence income is equal to cash disbursements. However, for most other cases, including that of risky level perpetuities, income is not equal to cash disbursements. Given the debt marginal rate τ_{PB}^α in Miller [1977] applies to income, it would appear that, implicitly, debt capital gains and cash disbursements (the two components of income) are taxed at the same rate, ruling out a zero capital gains tax rate for debt. If so, the simple 'grossing up' formula of type (40) cannot be applied in such a case. Logically therefore, whilst the general thrust of the Miller model obviously makes sense, the formal 'model' as sketched in the 1977 paper works in the way described there only if it is restricted to the case where debt is perpetual, constant and riskless, the equity cash flow is a level risky perpetuity, and the tax rate on equity capital gains is zero.

4. *BT* and *AT* discount rates in the literature

This section examines the surveyed works which focus on the valuation of *non-level* and *finite* risky cash flow profiles in the presence of personal taxes (Clubb and Doran [1991, 1992], Appleyard and

Strong [1989], Strong and Appleyard [1992] and Taggart [1991]). There are, within the framework of assumptions A1–A6, generally five determinants of multi-period *BT* discount factors, and four in the special case of a level perpetuity. Two determinants are asset-specific: risk, reflected in π_β , and the number of periods, T (which is not relevant, of course, in the case of the perpetuity). The remainder are general parameters: tax rates, τ and τ_g , and the riskless one-period *AT* discount factor π_r . This latter determinant arises from the tax deductibility of capital investments in calculating capital gains tax liability; such investments are always known for certain one period before discharge of the liability.

Turning now to the above literature, first note that all five surveyed models employ time-invariant one-period *BT* discount factors. In accordance with the Corollary to Proposition 1, within the specified framework (assumptions A1–A6), time-invariant one-period *BT* discount factors are incompatible with the assumption of time-invariant *AT* discount factors *unless* the rates of taxation, τ and τ_g , are equal. By the Corollary to Proposition 1, for these models to be internally consistent, the condition $\tau = \tau_g$ (i.e. $k=1$) must therefore hold as an explicit or implicit assumption. However, the model proposed in Clubb and Doran [1991], in explicitly assuming a zero level of equity capital gains tax (thus setting $\tau > \tau_g = 0$ for these equity tax rates), violates the Corollary (which establishes that, when $\tau > \tau_g$, it is inadmissible to assume that *both BT and AT* term structures for discount rates are flat.¹⁶

Of the remaining four models, Clubb and Doran [1992] explicitly assume $\tau = \tau_g$ for debt securities, whilst the other papers assume a constant overall or effective rate of tax on equity cash flows. We have already established that this is formally equivalent to making assumption A2 for CGT and also to assuming that $\tau = \tau_g$ (proof in Appendix 1). These models also assume a relationship between *BT* and *AT* discount rates of the form

$$r(\beta, 1) = \frac{\rho_\beta}{1 - \tau}, \quad (41)$$

which, using equations (2) and (3), gives a discount factor of the form

$$p(\beta, 0, 1) = \frac{\pi_\beta(1 - \tau)}{1 - \pi_\beta\tau}. \quad (42)$$

¹⁶ The relationship between *AT* and *BT* discount rates established in Proposition 1 is intrinsically non-linear when $\tau > \tau_g$. The non-linearity in the translation between *AT* and *BT* rates needs to be recognised even in the more general case where the *AT* term structure has an arbitrary shape.

Table 4
Implied BT discount rates (calculated using equation (19))

Year	$\tau=0.05$ (5%) Capital gains tax rate, τ_g					$\tau=0.2$ (20%) Capital gains tax rate, τ_g				
	0	0.05	0.1	0.2	0.4	0	0.05	0.1	0.2	0.4
1	0.158	0.103	0.048	-0.063	-0.283	0.375	0.310	0.244	0.113	-0.149
2	0.129	0.103	0.076	0.021	-0.098	0.230	0.202	0.173	0.113	-0.017
3	0.119	0.103	0.086	0.051	-0.026	0.185	0.168	0.150	0.113	0.031
4	0.114	0.103	0.091	0.066	0.012	0.163	0.151	0.139	0.113	0.056
5	0.111	0.103	0.094	0.075	0.035	0.150	0.141	0.132	0.113	0.071
6	0.109	0.103	0.096	0.082	0.051	0.142	0.135	0.128	0.113	0.082
7	0.108	0.103	0.097	0.086	0.063	0.136	0.130	0.125	0.113	0.089
8	0.107	0.103	0.098	0.089	0.072	0.131	0.127	0.122	0.113	0.095
9	0.106	0.103	0.099	0.092	0.078	0.128	0.124	0.120	0.113	0.099
10	0.106	0.103	0.100	0.094	0.084	0.125	0.122	0.119	0.113	0.103

With $\tau=\tau_g$, from (4), $k=1$. However, equation (18) shows that, for $k=1$,

$$p(\beta,0,1)=a\pi_\beta=\frac{\pi_\beta(1-\tau)}{(1-\pi_f\tau)}.$$

(43)

In a world of personal taxes ($\tau>0$), the right hand sides of equations (42) and (43) will be equal (and will therefore satisfy Propositions 1 and 2) *if and only if* $\beta=f$. That is, if and only if all the cash flows are *riskless*. Since the models in Appleyard and Strong [1989] and Strong and Appleyard [1992] both assume the relationship in (42) holds for all types of cash flow whether risky or not (i.e. $\beta\neq f$), these models are internally inconsistent, failing to properly account for the effect of the non-zero capital gains tax. The remaining two models, Clubb and Doran [1992] and Taggart [1991], employ the relationship in (42) only in the case of riskless cash flows. By restricting attention to this (rather limiting) special case, these models are internally coherent, at least by the test applied in the present paper.

5. Sensitivity analysis

Whilst the primary object was to examine the theoretical relationship between *BT* and *AT* discount rates and factors and to examine whether these had been consistently used in the literature, it is of some interest to explore numerically the non-linear relationship between these rates. Suppose then that there is an underlying *AT* stationary equilibrium in which *AT* discount rates are flat. For illustrative purposes the *AT* risk free rate is taken to be 5%, the risky *AT* discount rate is 10%. Table 4 gives *BT* spot discount rates, for effective tax rates of 5% and 20%,¹⁷ for a range of maturities and rates of capital gains tax.

Suppose one poses the question, given the above figures, what kind of error would be made by taking the *AT* rate grossed up by the tax rate (i.e. by using the rate $r(1-\tau)$) rather than the correct *BT* discount rate? That is, if, instead of calculating the correct value as, from (19),

$$r(\beta,T)=\left(\frac{1-\tau_g}{1-\tau}\right)^{1/T}\left\{\frac{(1+\rho_\beta)(1+\rho_f-\tau_g)}{(1-\tau_g)(1+\rho_f)}\right\}-1,$$

(44)

the calculation

$$\hat{r}(\beta,T)=\frac{\rho_\beta}{(1-\tau)}$$

(45)

is used. Retaining the same parameter values ($\rho_f=0.05$, $\rho_\beta=0.1$, $\tau=0.05$ or 0.2) it is then possible to calculate the percentage error in the calculation of the *BT* discount rate which arises in using (45) instead of (44). However, for valuation purposes, it is probably of more interest to compute the percentage error that would arise in using the associated discount *factor*, that is, instead of using the correct factor (19), reproduced here as

$$p(\beta,0,T)=\left(\frac{1-\tau}{1-\tau_g}\right)\left\{\frac{(1-\tau_g)(1+\rho_f)}{(1+\rho_\beta)(1+\rho_f-\tau_g)}\right\}^T,$$

(46)

one used the discount factor based on the (incorrect)

¹⁷ As noted in the introduction, the concern here is purely with establishing a consistent before tax and after tax treatment of the valuation process. For a given cash flow (or set of cash flows), there is of course an estimation issue associated with identifying what the appropriate level is for effective tax rates on cash flows and on capital gains.

Table 5
Percentage error calculations for the discount factor – equation (48)
(= percentage error in the valuation of a cash flow)

Year	$\tau=0.05$ (5%) Capital gains tax rate, τ_g					$\tau=0.2$ (20%) Capital gains tax rate, τ_g				
	0	0.05	0.1	0.2	0.4	0	0.05	0.1	0.2	0.4
1	4.76	-0.23	-5.22	-15.19	-35.15	22.22	16.40	10.58	-1.06	-24.34
2	4.26	-0.45	-5.17	-14.59	-33.41	19.51	14.10	8.70	-2.11	-23.67
3	3.77	-0.68	-5.12	-13.99	-31.62	16.85	11.84	6.84	-3.14	-23.00
4	3.27	-0.90	-5.07	-13.38	-29.79	14.25	9.63	5.02	-4.17	-22.32
5	2.78	-1.13	-5.02	-12.76	-27.90	11.71	7.47	3.23	-5.18	-21.63
6	2.29	-1.35	-4.98	-12.15	-25.97	9.23	5.34	1.47	-6.18	-20.94
7	1.80	-1.58	-4.93	-11.52	-23.98	6.80	3.26	-0.26	-7.18	-20.25
8	1.32	-1.80	-4.88	-10.90	-21.94	4.43	1.22	-1.96	-8.16	-19.54
9	0.84	-2.02	-4.83	-10.26	-19.85	2.11	-0.78	-3.63	-9.13	-18.83
10	0.36	-2.24	-4.78	-9.63	-17.70	-0.16	-2.75	-5.27	-10.09	-18.12

grossed up discount rate used in (45), namely

$$\hat{p}(\beta,0,T) \equiv \left(\frac{1}{1 + \frac{\rho_\beta}{1-\tau}} \right)^T = \left(\frac{1-\tau}{1 + \rho_\beta - \tau} \right)^T.$$

(47)

The percentage error in this calculation is then given as

$$\%error = \frac{\hat{p}(\beta,0,T) - p(\beta,0,T)}{p(\beta,0,T)} \times 100.$$

(48)

Note also that, since discount factors are applied directly to expected cash flows, the percentage error in these is identical with the percentage error in the valuation of the associated cash flow. Table 5 above gives the results for this latter calculation. The percentage error naturally depends on the values assumed for τ, τ_g , as well as the time the actual cash flow is received, T . In Tables 4 and 5, τ is set at 5% or 20%. Notice that the errors involved depend significantly on the choice of τ_g . For example, if $\tau_g=0$, the percentage error in valuation of a period 1 cash flow is 4.76% when the effective tax rate $\tau=0.05$, and over 22% when $\tau=0.2$.¹⁸

These numerical calculations establish the fact that the discrepancies which may arise in simply grossing up AT discount rates in order to deduce BT rates can be significant. Of course, one might not start with an assumption that the AT rates are flat. However, any analysis which attempts to move between BT and AT analysis must recognise the non-linearity of the transformation outlined in this paper if potentially significant empirical errors are to be avoided. For example, one might wish to use data on observing BT market values for assets, along with estimates of their BT expected cash flows in order to estimate the appropriate rate at which to value the BT expected cash flows of some

other asset. A natural approach is to postulate an underlying after tax equilibrium, to use the BT observed data to infer AT discount rates, and then to use these to reconstitute the appropriate BT discount rates for the new project/cash flow/asset. In this sort of analysis, as has been established in this paper, the move from BT to AT and back again must be done with some care.

6. Summary

The literature extending the Miles-Ezzell $ADMP$ approach to the case of valuing arbitrary finite risky cash flow profiles in the presence of personal taxes is aimed at furnishing a realistic yet practical approach to the capital budgeting problem. A general starting point, explicit or implicit in this literature, is that the simple linear relationship between BT and AT discount rates and the effective tax rate found in Miller [1977] carries through to more general settings than the case where debt is riskless and fixed in perpetuity and where equity income evades all personal taxes. It is shown in this paper that Miller's specific model is an unproblematic special case precisely because it *does* assume the cash flow is a riskless perpetuity *and* that the capital gains tax rate is zero. Any extensions of the 'debt and taxes' model to incorporate positive equity tax rates – or risky debt – would seem to require a more careful treatment of the BT/AT relationship identified in this paper.

The relationships identified here between AT and BT discount factors (discount rates) have received no attention in the literature on valuation of equities in the presence of personal taxes (although related issues have been discussed in work on the

¹⁸ And it was pointed out in footnote 5 that even small errors in the valuation of a single cash flow *may* give rise to large errors in the overall valuation of a project.

valuation of bonds). Even those articles which do not suffer from the inconsistency problem identified here do not discuss, or even mention, this issue. This suggests that the relationships discussed in this paper may not be widely known or understood (as manifest by the fact that several papers in the above literature develop models based on assumptions that turn out to be internally incoherent). Specifically, the models of Clubb and Doran [1991], Appleyard and Strong [1989] and Strong and Appleyard [1992] are found to be based upon internally contradictory assumptions; the valuation formulae derived in these papers are consequently unreliable. The models contained in Miller [1977], Clubb and Doran [1992] and

Taggart [1991] are confined to special cases where it turns out the model assumptions are internally consistent (although there is no discussion in these papers of why there is a need to confine attention to these rather special cases). At an empirical level, the magnitude of the potential error that might be incurred by assuming that both rates of taxation and BT/AT term structures are flat has been shown to be potentially quite significant.¹⁹ This paper clarifies the issues involved, such that any future modelling in this area will not suffer from internal inconsistencies of the type described above.

¹⁹ Although this naturally depends on one's assessment of what the effective tax rates are likely to be.

Appendix

A1 Proof that assuming a constant effective tax rate and constant before and after tax discount rates implies that $\tau = \tau_g$.

To establish this result, consider a simple transaction in which the marginal investor considers buying an arbitrary multi-period risky cash flow $\{\bar{x}_t, \dots, \bar{x}_T\}$ ($t < T$) at time $t-1$ and selling it in period t . The consequences are set out in the following table:

Period	Cash flow
$t-1$	$-V_{t-1}$ (purchase of asset)
t	\bar{V}_t (sale of asset)
t	$\bar{x}_t(1-\tau_t)$ (the receipt of dividend cash flow, net of personal income tax)
t	$-(\bar{V}_t - V_{t-1})\tau_{gt}$ (payment of CGT).

Notice that we allow that both τ_t , the dividend tax rate and τ_{gt} , the CGT tax rate might vary over time for the marginal investor. However, for a given time period, for any asset in the individual's portfolio on which dividends are paid, the same rate of dividend tax must apply, and equally, for any capital gains realised by such an individual, the same CG tax rate must apply. That is, for the marginal investor, personal tax rates are the same across assets at any given point in time. To simplify notation, let $\bar{V}_{t-1} = E_{t-1}(\bar{V}_t)$ and $\bar{x}_t = E_{t-1}(\bar{x}_t)$. The assumptions explicitly made in the literature are as follows:

- (1) the before tax rate of return/discount rate r is constant over time and over assets in the same risk class,
- (2) the after tax rate of return/discount rate ρ is constant over time and over assets in the same risk class and finally,
- (3) $\rho = r(1-\tau^*)$ where τ^* is an effective tax rate constant over time and across cash flows at the same point in time (τ^* is thus a 'weighted average' of the marginal investor's dividend and capital gains tax rates).

From assumptions (1) and (2), clearly

$$r = \frac{\bar{x}_t + (\bar{V}_t - V_{t-1})}{V_{t-1}} \quad \text{or equivalently} \quad V_{t-1} = \frac{\bar{x}_t + \bar{V}_t}{1+r} \quad (\text{A1.1})$$

$$\rho = \frac{(\bar{V}_t - V_{t-1})(1-\tau_{gt}) + \bar{x}_t(1-\tau_t)}{V_{t-1}} \quad (\text{A1.2})$$

Connecting (A1.1) and (A1.2) using assumption $\rho = r(1-\tau^*)$ gives

$$\frac{(\bar{V}_t - V_{t-1})(1-\tau_{gt}) + \bar{x}_t(1-\tau_t)}{V_{t-1}} = (1-\tau^*) \frac{\bar{x}_t + (\bar{V}_t - V_{t-1})}{V_{t-1}} \quad (\text{A1.3})$$

which simplifies to give

$$\bar{V}_t(\tau^* - \tau_{gt}) = \bar{x}_t(\tau_t - \tau^*) + V_{t-1}(\tau^* - \tau_{gt}) \quad (\text{A1.4})$$

First, note that a sufficient condition for this to hold is that $\tau_t = \tau_{gt} = \tau^*$. It is also necessary. To see this, suppose that $\tau^* - \tau_{gt} \neq 0$. In this case we can write (A1.4) as

$$\bar{V}_t = \frac{\bar{x}_t(\tau_t - \tau^*) + V_{t-1}(\tau^* - \tau_{gt})}{\tau^* - \tau_{gt}} \quad (\text{A1.5})$$

so that, substituting this back into (A1.1), we have

$$(1+r)V_{t-1} = \bar{x}_t + \frac{\bar{x}_t(\tau_t - \tau^*) + V_{t-1}(\tau^* - \tau_{gt})}{\tau^* - \tau_{gt}} \quad (\text{A1.6})$$

or

$$V_{t-1} = \frac{\bar{x}_t}{r} \left(\frac{\tau_t - \tau_{gt}}{\tau^* - \tau_{gt}} \right) \quad (\text{A1.7})$$

Thus, the implication of assuming (1), (2) and (3) above, when $\tau^* - \tau_{gt} \neq 0$, is that one can write the value at time $t-1$ of an asset with arbitrary cash flow purely as a function of the expected cash flow in the next period (and tax and discount rates). That is, the value of the multi-period cash flow $\{\bar{x}_t, \dots, \bar{x}_T\}$ would have to be independent of any cash flows happening after time t , a clear nonsense.²⁰ Given that the model is intended to deal with the multi-period and general case, it follows that we must impose $\tau^* = \tau_{gt}$. But then, by (A1.4), this also entails $\tau^* = \tau_t$. Thus conditions (1)–(3) above are mutually consistent if and only if $\tau_t = \tau_{gt} = \tau^*$.

A2 Proof for Proposition 1.

In the paper it was established that, from equation (7),

$$V_0 = p(\beta, 0, T)E_0(x_T), \quad (\text{A2.1})$$

and, from (10) and (15), that

$$V_{T-i} = E_{T-i}(x_T)k(a\pi_\beta)^i \text{ for } i=1,2 \quad (\text{A2.2})$$

We now show that, for any i , ($0 < i < T$, $T \geq 2$), if

$$V_{T-j} = E_{T-j}(x_T)k(a\pi_\beta)^j \quad j=1, \dots, i \quad (\text{A2.3})$$

holds, then it is also true that

$$V_{T-(i+1)} = E_{T-(i+1)}(x_T)k(a\pi_\beta)^{i+1} \quad (\text{A2.4})$$

Once this is established the rest of the proof is immediate; by induction, if (A2.2)–(A2.4) hold, this implies

$$V_0 = E_0(x_T)k(a\pi_\beta)^T \quad (\text{A2.5})$$

Hence, equating (A2.1) and (A2.5) gives the relationship between *BPT* and *AT* discount factors specified in Proposition 1, namely that

$$p(\beta, 0, T) = k(a\pi_\beta)^T \quad (\text{A2.6})$$

Returning to the proof of (A2.4), let $Y_t^s(\chi)$ denote the value at time s of an *AT* cash flow χ which arises at time t ($t > s$). Now, from the value additivity principle,

²⁰ Any and all cash flow profiles of the form $\{\bar{x}_t, \dots, \bar{x}_T\}$ which had the same expected cash flow at time t must have the same value; that is, for a constant effective tax rate to hold and for $\tau^* - \tau_{gt} \neq 0$, the only type of cash flow that is admissible is the one period cash flow, the rather special and uninteresting case where $\{\bar{x}_t, \dots, \bar{x}_T\} = \{\bar{x}_t, 0, \dots, 0\}$.

$$\begin{aligned}
 V_{T-(i+1)} &= Y_{T-(i+1)}^T(x_T) + Y_{T-(i+1)}^{T-1}(x_{T-1}) + \dots + Y_{T-(i+1)}^{T-i}(x_{T-i}) \\
 &= Y_{T-(i+1)}^T(x_T(1-\tau) - \tau_g V_T + \tau_g V_{T-1}) + Y_{T-(i+1)}^{T-1}(-\tau_g V_{T-1} + \tau_g V_{T-2}) \\
 &\quad + Y_{T-(i+1)}^{T-2}(-\tau_g V_{T-2} + \tau_g V_{T-3}) + \dots \\
 &\quad + Y_{T-(i+1)}^{T-(i-1)}(-\tau_g V_{T-(i-1)} + \tau_g V_{T-i}) + Y_{T-(i+1)}^{T-i}(-\tau_g V_{T-i} + \tau_g V_{T-(i+1)})
 \end{aligned} \tag{A2.7}$$

Since $V_T=0$, clearly

$$Y_{T-(i+1)}^T(\tau_g V_T) = 0. \tag{A2.8}$$

Following the principles of valuation discussed in the paper (Section 2, the "AT approach"), the following are straightforward to establish:

$$Y_{T-(i+1)}^T(x_T(1-\tau)) = (1-\tau)\pi_\beta^{i+1} E_{T-(i+1)}(x_T). \tag{A2.9}$$

That is, the expected risky cash flow is discounted $i+1$ periods by the risky discount factor π_β . Proceeding term by term, using (A2.3);

$$Y_{T-(i+1)}^T(\tau_g V_{T-1}) = \tau_g \pi_f \pi_\beta^i E_{T-(i+1)}(V_{T-1}) = \tau_g \pi_f \pi_\beta^{i+1} ka E_{T-(i+1)}(x_T). \tag{A2.10}$$

In (A2.10), note that the cash flow V_{T-1} occurs at time T , so is known for certain at time $T-1$. Prior to that it is risky, hence the discount factor is $\pi_f \pi_\beta$. Note also that (A2.10) makes use of the fact that

$$E_{T-(i+1)}(V_{T-j}) = E_{T-(i+1)}(E_{T-j}(x_T)k(a\pi_\beta)^j) = k(a\pi_\beta)^j E_{T-(i+1)}(x_T) \text{ for } j=1, \dots, i, \tag{A2.11}$$

by the law of iterated expectations (see e.g. Hamilton [1994, p742]). This 'law' is applied repeatedly below. Thus,

$$Y_{T-(i+1)}^{T-1}(-\tau_g V_{T-1}) = -\tau_g \pi_f \pi_\beta^i E_{T-(i+1)}(V_{T-1}) = -\tau_g \pi_f \pi_\beta^{i+1} ka E_{T-(i+1)}(x_T),$$

$$Y_{T-(i+1)}^{T-1}(\tau_g V_{T-2}) = \tau_g \pi_f \pi_\beta^{i-1} E_{T-(i+1)}(V_{T-2}) = \tau_g \pi_f \pi_\beta^{i+1} ka^2 E_{T-(i+1)}(x_T),$$

.....

$$Y_{T-(i+1)}^{T-(i-1)}(-\tau_g V_{T-(i-1)}) = -\tau_g \pi_f \pi_\beta^2 E_{T-(i+1)}(V_{T-(i-1)}) = -\tau_g \pi_f \pi_\beta^{i+1} ka^{i-1} E_{T-(i+1)}(x_T),$$

$$Y_{T-(i+1)}^{T-(i-1)}(\tau_g V_{T-i}) = \tau_g \pi_f \pi_\beta E_{T-(i+1)}(V_{T-i}) = \tau_g \pi_f \pi_\beta^{i+1} ka^i E_{T-(i+1)}(x_T),$$

$$Y_{T-(i+1)}^{T-i}(-\tau_g V_{T-i}) = -\tau_g \pi_f \pi_\beta E_{T-(i+1)}(V_{T-i}) = -\tau_g \pi_f \pi_\beta^{i+1} ka^i E_{T-(i+1)}(x_T).$$

Finally,

$$Y_{T-(i+1)}^{T-i}(\tau_g V_{T-(i+1)}) = \pi_f \tau_g V_{T-(i+1)},$$

since the cash flow $V_{T-(i+1)}$ occurring at time $T-i$ is known for certain at time $T-(i+1)$. Taking this last term over to the LHS and gathering terms gives the result

$$V_{T-(i+1)}(1-\pi_f \tau_g) = E_{T-(i+1)}(x_T) \left[\pi_\beta^{i+1} \left\{ \begin{aligned} &(1-\tau) + \tau_g(\pi_f - 1)ka \\ &+ \tau_g(\pi_f - 1)ka^2 \\ &+ \dots + \tau_g(\pi_f - 1)ka^i \end{aligned} \right\} \right] \tag{A2.12}$$

The RHS term in brackets can be written as

$$\left\{ \begin{aligned} &(1-\tau) + \tau_g (\pi_f - 1) ka \\ &+ \tau_g (\pi_f - 1) ka^2 \\ &+ \dots + \tau_g (\pi_f - 1) ka^l \end{aligned} \right\} = \left\{ (1-\tau) + k\tau_g (\pi_f - 1) \sum_{j=1}^l a^j \right\}, \quad (\text{A2.13})$$

where the geometric sum on the RHS can be written as $a(1-a^l)/(1-a)$.

Putting these together gives

$$V_{T-(l+1)} = \pi_\beta^{l+1} \frac{E_{T-(l+1)}(x_T)}{(1-\pi_f \tau_g)} \left\{ (1-\tau) + k\tau_g (\pi_f - 1) \frac{a(1-a^l)}{1-a} \right\}. \quad (\text{A2.14})$$

Working on the last term this simplifies to give

$$\left\{ (1-\tau) + \left(\frac{1-\tau}{1-\tau_g} \right) \tau_g (\pi_f - 1) \frac{a(1-a^l)}{1-a} \right\} = (1-\tau) \left(\frac{1-\tau_g}{1-\pi_f \tau_g} \right) \quad (\text{A2.15})$$

Hence

$$\begin{aligned} V_{T-(l+1)} &= \pi_\beta^{l+1} \frac{E_{T-(l+1)}(x_T)}{(1-\pi_f \tau_g)} (1-\tau) \left(\frac{1-\tau_g}{1-\pi_f \tau_g} \right) \\ &= E_{T-(l+1)}(x_T) k (a\pi_\beta)^{l+1} \end{aligned} \quad (\text{A2.16})$$

given that

$$k = \left(\frac{1-\tau}{1-\tau_g} \right) \text{ and } a = \left(\frac{1-\tau_g}{1-\pi_f \tau_g} \right).$$

This establishes (A2.4) and hence the result (A2.6) follows.

A3 Impact of τ, τ_g on the discount factor:

Equation (20) is trivial; this section establishes (21). From (18),

$$p(\beta, 0, T) = \left(\frac{1-\tau}{1-\tau_g} \right) \left(\pi_\beta \frac{(1-\tau_g)}{(1-\pi_f \tau_g)} \right)^T. \quad (\text{A3.1})$$

The partial derivative with respect to τ_g is given as (using the product, chain and quotient rules):

$$\begin{aligned} \frac{\partial p(\beta, 0, T)}{\partial \tau_g} &= \frac{p(\beta, 0, T)}{(1-\tau_g)} \\ &+ \left(\frac{1-\tau}{1-\tau_g} \right) \pi_\beta^T \left(\frac{-T(1-\tau_g)^{T-1}(1-\pi_f \tau_g)^T + \pi_f T(1-\pi_f \tau_g)^{T-1}(1-\tau_g)^T}{(1-\pi_f \tau_g)^{2T}} \right) \end{aligned} \quad (\text{A3.2})$$

which can be simplified to give

$$\frac{\partial p(\beta, 0, T)}{\partial \tau_g} = \frac{p(\beta, 0, T)((1-\pi_f \tau_g) - T(1-\pi_f))}{(1-\tau_g)(1-\pi_f \tau_g)} \quad (\text{A3.3})$$

which is equation (21) in the paper.

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The ownership structure of UK firms and the informativeness of accounting earnings

Raymond Donnelly and Caitriona Lynch

Abstract—This paper provides evidence that in the UK, a firm's ownership structure is related to the informativeness of its accounting earnings for price. Evidence is reported that concentrated outside ownership is negatively related to the contemporaneous price-earnings association. This is interpreted as indicative of more non-accounting information being collected and disseminated for firms whose ownership includes large outside (non-managerial) blocks and a consequential loss of informativeness of contemporaneous accounting earnings. Having controlled for the information environment, we provide evidence that the overall relation between return and earnings is attenuated for firms with diffuse outside ownership. This is interpreted as evidence of the market anticipating opportunistic managerial manipulation of earnings when outside ownership is diffuse.

1. Introduction

The informativeness of accounting earnings, for valuation purposes, is affected both by the existence of alternative information sources and by how well earnings reflect the economic performance of the enterprise. A richer information environment dilutes the importance of accounting earnings as an information source and earnings manipulation may attenuate the link between a firm's earnings and its economic fundamentals.¹ Ownership structure is posited to be related to both of these variables and, thus, to the informativeness of earnings.

Ownership can be classified into three simple categories: (a) management or inside ownership (IN); (b) outside blocks (OB); (c) diffuse outside ownership (DOO). Prior literature, generally, selects one, or combines two, of the above categories and examines the impact of that category or combination on the return-earnings relation. It is outsiders with significant stakes that demand the information that leads to price anticipation of earnings. Accordingly, the information environment literature (e.g. El-Gazzar, 1998) implies an examination of the impact of external ownership concentration, OB, on the informativeness of earnings. The earnings manipulation hypothesis suggests that the separation of ownership from

control motivates and facilitates earnings manipulation. Thus, the diffuseness of ownership (DOO) is the crucial variable. For example, Warfield et al. (1995) examine the affect of the antithesis of DOO, (IN + OB), on the informativeness of earnings. Since our study is motivated by both the earnings manipulation and differential information hypotheses we use both OB and DOO to explain the informativeness of accounting earnings. Because of the presence of different levels of Management ownership or IN, OB is not simply the antithesis of DOO. IN interacts with OB and DOO in different ways under each hypothesis, across firms (see Table 1 below for details).

Some authors (e.g. Bhushan, 1989; El-Gazzar, 1998) contrast institutional ownership with other ownership. The classification OB is used here because: (i) it is in keeping with the theoretical arguments presented below and (ii) outside blocks tend to be owned by institutions. Our study also differs from El-Gazzar (1998) in that it examines the influence of ownership structure on the return-earnings relation in a valuation context as opposed to an event study setting. This allows an evaluation of the impact of ownership structure on the overall return-earnings relation rather than just the announcement effects.

Both strands of the literature outlined above are largely US-based. The major similarity between the US and UK is that both have market-based systems of corporate governance. However, the ownership structure of US companies is far more diffuse than that in the UK. Faccio and Lasfer

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¹ Earnings management can increase as well as reduce the informativeness of earnings. The hypothesis here refers to opportunistic manipulation of earnings.

(1999) summarise the literature on the main institutional differences between the US and the UK. They point out that institutional shareholders are the largest category of shareholders in the UK while individuals are the largest group in the US. There are informal coalitions of institutional investors in the UK but not in the US. There are lower legal barriers to shareholder activism in the UK and shareholders in Britain are subject to less legal restrictions on the size of their stakes in individual firms. While the general system of corporate governance in both countries is similar, the differences are such that one cannot naively extrapolate the US results to the UK. Thus, as well as extending the extant US literature by simultaneously examining both the earnings manipulation and differential information hypotheses, this study also addresses the need for independent UK evidence.

Following Warfield et al. (1995) we use the responsiveness of return to earnings as proxy for the informativeness of the latter. Specifically, our ownership variables are used to explain variation in estimated Earnings Response Coefficients (ERCs). Studies that are motivated by the earnings manipulation rationale do not directly control for the relation between ownership structure and the information environment when examining the relation between the former and the return-earnings relation.² We extend the extant literature pertaining to the affect of earnings manipulation on the informativeness of earnings by controlling for the differential information hypothesis. This is achieved by using the technique of Kothari (1992) and Kothari and Sloan (1992). We hypothesise that significant non-management or external shareholders have an incentive to reduce information asymmetries and to monitor management. This suggests that there is greater price anticipation of earnings for firms with concentrated external ownership, and ERCs of such firms, based on contemporaneous return-earnings regressions, are biased downward.

Ownership structure is also related to managerial incentives to manipulate accounting earnings (Salamon and Smith, 1979). There are reduced incentives for firms that are management-owned to engage in opportunistic earnings manipulation. Also, outsiders who own large blocks of shares have alternative information sources that render such manipulation ineffective (Salamon and Smith, 1979). Furthermore, they monitor management and prevent earnings manipulation. When outside ownership is significant, but diffuse, incentives for manipulation are strongest and moni-

toring is not rigorous. Thus, both the motivation and opportunity for managerial manipulation of earnings increase with DOO. It is predicted that the market presumes such manipulation and considers the link between the underlying economic earnings and accounting earnings to be weaker for firms whose outside shareholdings are diffuse. Accordingly, the estimated ERC is attenuated for such firms.

Our empirical analysis uses both two-stage and one-stage approaches. The former involves, first, estimating the informativeness of earnings, as measured by ERC, for each firm in the sample. The second stage examines the impact of ownership structure on the ERCs estimated in stage one. This approach addresses how between-firm variation in ERC is explained by ownership structure. The second approach estimates both the ERC and the impact of ownership structure on ERC simultaneously, using a panel data regression. Here we examine how ownership structure explains both cross-sectional and inter-temporal variation in ERC. Our evidence confirms that ownership structure affects the informativeness of accounting earnings. While the impact of the differential information hypothesis is apparent in the results of both methods, its affect is clear only when the two-stage approach is employed. Ownership structure is found to be related to ERC, as predicted by the managerial manipulation hypothesis, regardless of the method used.

2. Hypothesis development

2.1. Earnings response coefficients

The impact of accounting earnings on price is typically measured by the earning responses coefficient (ERC). The latter is estimated as the slope coefficient in a regression of return on some earnings-based metric. This can be a measure of actual or unexpected earnings. Ohlson (1991) outlines a simple neo-classical model demonstrating that the level of earnings scaled by price explains returns when dividends and earnings are the only value-relevant information available to investors:

$$(P_t + d_t)/P_{t-1} = R_t = \phi(x_t/P_{t-1}) \quad (1)$$

where:

ϕ equals $1 + 1/r$, and r is the cost of capital.

Ohlson observes that because of the deflation by P_{t-1} , x_t/P_{t-1} does 'exactly the same job' in his model, as unexpected earnings scaled by price. Ohlson also points out that once other (non-earnings and dividend) information is allowed to enter the analysis, the level of earnings scaled by beginning of period price is not sufficient to explain return. Thus, when the empirical version of equation (1) is estimated, i.e. contemporaneous return is regressed on earnings scaled by price:

² The control variables used, for example, by Warfield et al (1995) and Plenborg et al. (1998) are related to the information environment so some indirect control is evident.

$$(P_t + d_t)/P_{t-1} = \alpha + \beta(x_t/P_{t-1}) + e_t \quad (2)$$

empirical estimates of ϕ , i.e. β or ERC, are biased and attenuated toward zero.

Kothari (1992) considers such a scenario. He argues that only the unanticipated portion of earnings is relevant in explaining contemporaneous returns. Kothari's solution is to extend the return cumulation period back in time such that the following model is estimated:

$$(P_t + d_t)/P_{t-\tau} = \alpha + \beta(x_t/P_{t-\tau}) + e_t \quad (3)$$

where $\tau > 1$.

Evidence from Kothari (1992), Kothari and Sloan (1992) and Donnelly and Walker (1995) suggest that such a technique does mitigate the bias in estimated earnings response coefficients (ERCs). Evidence from Donnelly (1998) suggests that increasing τ beyond 2 is of little, and beyond 3 of no, benefit. It is, therefore, assumed that ERCs estimated using three years (two leading) of returns in the dependent variable are largely unbiased. In this paper we term ERCs estimated using contemporaneous models similar to equation 2 as ERC1. We term the slope coefficients or ERCs estimated from equation 3 as ERC2 or ERC3, depending on whether τ is 2 or 3. The term ERC refers to all of ERC1, ERC2 and ERC3.

2.2. Alternatives to accounting information: the differential information hypothesis

The amount of information disseminated varies across firms. Evidence that this cross-sectional variation in the information environment is related to ownership structure is provided by Bhushan (1989) for analyst following; McCaffery (1997) for dividend initiation announcements; Barker (1998) for information collection.

Shareholders who own large blocks, (generally institutions) have a greater incentive and ability to acquire more timely predisclosure information (e.g. Jiambalvo et al. 2002). Thus, accounting earnings face more competition from other, more timely, information sources as concentration in outside ownership, i.e. OB, increases. The resulting richer information environment causes prices to anticipate earnings to a greater degree for firms with concentrated outside ownership.

Therefore, the responsiveness of return to earnings, as measured by contemporaneous return-earnings regressions, are biased downward for such firms. Evidence from El-Gazzar (1998) that the responsiveness of price to earnings announcements is negatively related to institutional ownership is consistent with this hypothesis. Rajgopal and Venkatachalam (1997) use the method described by Kothari (1992) and Kothari and Sloan (1992) to establish that there is a greater tendency for prices to lead earnings for firms with high in-

stitutional ownership. Thus, the extant evidence suggests that more non-accounting information is disseminated regarding firms with institutional or concentrated outside ownership. This has obvious implications for the informativeness of accounting earnings.

2.3. The earnings manipulation hypothesis

Accounting accruals have value relevance over and above the funds component of earnings (e.g. Wilson, 1986). Further, the discretionary component of accruals has incremental value relevance beyond the non-discretionary component (Subramanyam, 1996). While the latter paper provides evidence that the market places a positive value on discretionary accruals on average, it is silent about how such accruals are valued in specific contexts. There is evidence that the value-relevance of this discretionary component of earnings is context specific (Ahmed, 1996). While most managements have some incentive to manage earnings, their motivations and hence the affect of the manipulation on the informativeness of earnings vary.

One variable that may define the context in which managerial discretion is exercised is ownership structure. This argument relies on the assumption that managers are opportunistic (e.g. Jensen and Meckling, 1976; Fama, 1980). Financial reporting plays a monitoring and contracting role in manager-controlled (high DOO) companies. The possibility that managerial compensation may be linked to reported earnings provides a clear incentive to distort or manage accounting earnings. Furthermore, financial reporting is an essential method of external communication which management may use to disguise the adverse effects of their opportunistic behaviour on the value of the firm. Such manipulation is designed to confound shareholders and investors and palliate the possibility of take-over (Salamon and Smith, 1979: 319). Thus, when a firm has high DOO, management may exercise their control over information releases to present themselves in the best possible light and disguise their opportunistic behaviour (Williamson, 1967; Hindley, 1970). Salamon and Smith (1979) show that when DOO is high: there is less consistency between earnings surprises and stock returns in years of accounting policy change and, also, there is an association between firm performance and accounting policy changes. Barnea et al. (1976) suggest that the incidence of income smoothing seems to vary cross-sectionally, and in particular with the degree of outside control i.e. the influence of non-management shareholders.

Warfield et al. (1995) adopt an earnings manipulation perspective to motivate an examination of the relation between ownership structure and the

return-earnings relation in the US. They propose that accounting-based contracts written to attenuate non-value-maximising behaviour, caused by the separation of ownership from control, induce managers to engage in earnings management and income smoothing. Warfield et al. (1995) argue that managers who do not have significant ownership in the company have greater incentives to opportunistically manipulate earnings, implying lower informativeness of these companies' earnings. Such earnings management may mitigate the correlation between accounting earnings and the economic reality, which they purport to reflect. This exacerbates the errors-in-variables bias in return-earnings models and the ERC is biased toward zero. This bias is predicted to be positively related to DOO and decreasing in (IN+OB). Warfield et al. (1985) report evidence that both the correlation between earnings and returns and the earnings response coefficient (ERC) are increasing functions of managerial ownership.³

Ownership structure is related to internal corporate governance mechanisms. For example, Faccio and Lasfer (1999) demonstrate that board structure in the UK is clearly related to ownership structure. Their results suggest that management ownership is a determinant of board structure. There is evidence that board structure and audit committees can affect the opportunities for manipulation of earnings by management (Chtourou et al. 2001); (Peasnell et al. 2000). Thus, we have evidence that a corporate governance mechanism, that is itself (at least in part) determined by ownership structure, is related to earnings management. Since the evidence points to management ownership being a primary determinant of other corporate governance mechanisms we confine our analysis to the former and do not consider the particular structures that shareholders use to safeguard their interests.

2.4. Predictions regarding the impact of ownership structure on ERC

The analysis above describes two alternative rationales for a relation between ownership structure and the informativeness of earnings as reflected in estimated ERCs. First, the differential information hypothesis pertains to the extent and timeliness of competing sources of information. Second, the managerial manipulation hypothesis predicts that the link between accounting earnings and the economic events they purport to represent can be attenuated by opportunistic manipulation of earnings. The manner in which ownership structure is related to these hypotheses and predicted to

impact on ERC is summarised in Table 1.

Predictions pertaining to the differential information hypothesis are stated in terms of the impact of ownership structure on ERC1, since it is only ERC1 that is likely to be differentially biased in the face of variation in price anticipation of earnings. However, it should be noted that the differential information hypothesis does not predict a relation between ERC2/3 and ownership structure. Predictions implied by the earnings manipulation hypothesis are not influenced by the manner in which ERC is estimated so are stated simply in terms of ERC without reference to the number of leading returns used to compute the latter. But unequivocal results pertaining to the earnings manipulation hypothesis may only emerge once the differential information hypothesis is controlled for i.e. for ERC2 or ERC3.

Table 1 shows that because of their relatively sparse information environments the prices of firms with high managerial ownership (IN) and high diffuse outside ownership (DOO) are less likely to anticipate earnings (Panel I). The converse is true of outside blocks (OB). Thus, the prediction of the differential information hypotheses for the informativeness of earnings can be summarised parsimoniously as: ERC1 is a negative function of OB.

The opportunistic earnings manipulation argument predicts a positive relation between OB and ERC. Thus, the prediction for ERC1 vs. OB in Panel I (Column B) of Table 1 is the converse of the prediction for ERC vs. OB in Panel II and, we have no overall prediction regarding the relation between OB and ERC1. However, according to the earnings manipulation hypothesis, OB should be positively related to ERC2/ERC3. According to Panel II, firms with high management ownership, IN should have a reduced incentive to manipulate earnings. This should also increase the responsiveness of price to earnings for these firms. The only ownership variable that is predicted by the earnings manipulation hypothesis to have a negative relation with ERC is DOO. Thus, a parsimonious model to test the hypothesis that ownership structure affects the informativeness of earnings, because of their opportunistic manipulation, will use DOO to explain the responsiveness of price to earnings.

It should be noted that the differential information hypothesis predicts that prices will tend not to anticipate earnings for firms with high DOO and this has a mitigating influence on the bias in estimates of ERC1 (i.e. DOO is positively related to ERC1). Thus, one cannot make any predictions regarding the influence of DOO on the basis of a contemporary regression of return on earnings. However, ERC2/ERC3 which are not affected by the differential information hypothesis, are pre-

³ In Warfield et al., managerial ownership includes officers and directors who own at least 1000 shares and any shareholder who owns 10% or more of the company.

Table 1
Predictions regarding the influence of ownership structure on the informativeness of accounting earnings

	A Inside (management) ownership (IN)	B Outside blocks (OB)	C Diffuse outside Ownership (DOO)
<i>Panel I</i>			
Differential Information Hypothesis	Price anticipation of earnings decreases as IN increases.	Price anticipation of earnings increases as OB increases.	Price anticipation of earnings decreases as DOO increases.
	ERC1 is positively related to IN.	ERC1 is negatively related to OB.	ERC1 is positively related to DOO.
<i>Panel II</i>			
Earnings Manipulation Hypothesis	Earnings management is a decreasing function of IN.	Earnings management is a decreasing function of OB.	Earnings management is an increasing function of DOO.
	ERC is positively related to IN.	ERC is positively related to OB.	ERC is a negative function of DOO.

IN – Inside ownership: percentage of share capital held beneficially by directors.
OB – Outside blocks of 5% or greater
DOO – Diffuse outside ownership: 100% less IN less OB.

ERC1 is the ERC estimated from a contemporaneous regression of returns on earnings, appropriately scaled. ERC rather than ERC1 is used for the earnings manipulation part of the Table since the latter is predicted to affect ERC in the same way regardless of how many years of leading returns are used to estimate the latter.

Researchers have examined the relationship of ERC with ownership as defined by institutional ownership, which is analogous to B (El-Gazzar, 1998) or A and B combined (Warfield et al., 1995). Plenborg et al. (1998) consider both A and B separately.

dicted to be negative functions of DOO on the basis of the earnings manipulation hypothesis.

The predictions outlined in Table 1 can therefore be summarised as the following two hypotheses.

The differential information hypothesis:

H₀: OB is not related to ERC1

H₁: OB is negatively related to ERC1

The earnings manipulation hypothesis:

H₀: DOO is not related to ERC

H₁: DOO is negatively related to ERC

3. Data and empirical analysis

The predictions outlined in Table 1 are tested using a sample of UK companies which have the relevant accounting and security prices on Datastream. The criteria for inclusion in the sample are: non-financial companies with earnings and security price data on Datastream for at least five of the years from 1985–1991, a 31 December year-end throughout the sample period and data regarding ownership structure available on Crawford's *Directory of City Connections*.⁴ The restriction of the sample to firms with 31 December year-ends will not bias the results (see Kormendi and Lipe,

1987; Collins and Kothari, 1989 and Fama and French, 1992). The choice of the first date was influenced by the fact that Crawford's *Directory of City Connections* only became an annual publication from 1986. The 1984–85 edition was taken to be representative of ownership structure in 1985. It was decided to use 1991 as the final year in the sample since many companies adopted Financial Reporting Standard 3 (FRS3), which was required from 1993, in 1992. This means that earnings pre-1992 are not comparable with those reported subsequently. Since the implementation of FRS3, companies cannot classify revenue and expenses as extraordinary items. Further, the method of computing profit from sales of fixed assets that have been revalued upwards has been changed and now severely restricts the potential for using such sales for the purpose of earnings management. Post-FRS3, the profit from the sales of revalued assets is computed as the sale proceeds less the carrying value, whereas prior to FRS3 it could be

⁴ Crawford's survey companies directly to collect information on advisors and owners. For more details see <http://www.crawfordsonline.co.uk/>

computed as sales proceeds less the historical cost. Accordingly, the methods of earnings management available to UK companies were significantly altered by FRS3. This supported by Black et al.'s (1998) evidence that asset sales were used for income smoothing prior to FRS3 but not afterwards.

Datastream lists of active companies for which accounting data is available were examined to ascertain which companies met the above earnings and security price criteria. The same procedure was adopted for Datastream's list of dead companies.⁵ This provided a sample of 334 companies, of which 84 were 'dead', that satisfied the criteria and had the requisite data on Datastream. The sample was further reduced to 262, including 63 'dead', by the requirement for ownership details from Crawford's *Directory of City Connections*.

Data was not available on all of these 262 companies for each year. However, there were 1729 (1693) firm-years for which both return and earnings data (Datastream # 182) were available to estimate ERCs when contemporaneous (one year of leading) returns were used in the regression. Return is computed as $(P_t - P_{t-\tau})/P_{t-\tau}$ (henceforth $CG_{t-\tau}$) where P_t is the price six months after the accounting year-end and $P_{t-\tau}$ is the price either 6 ($\tau=1$), 18 ($\tau=2$) or 30 months ($\tau=3$) before the fiscal year-end. It was decided to terminate the return cumulation window 6 months after the financial year-end because some, particularly small, UK companies are extremely tardy in reporting their profits. The earnings variable used is Total Earnings scaled by Market Value $X_t/MV_{t-\tau}$ where $\tau=1, 2$ or 3. The sample contained some extreme observations of the above variables. Accordingly, it was decided to remove values of $CG_{t-\tau}$ which were greater than 200% for $\tau=1$ and 400% for $\tau=2$ and $\tau=3$. Observations, which had values of $X_t/MV_{t-\tau}$ greater in absolute value than 100% for $\tau=1$ and 200% for $\tau=2$ and $\tau=3$ were also deleted. This reduced the useable number of observations for estimating ERCs to 1698 for $\tau=1$ and 1660 for $\tau=2$. Descriptive statistics for the earnings and return variables are outlined in Table 2 below. This Table shows that the elimination of extreme outliers greatly reduces kurtosis for all variables. Standard deviation, kurtosis and skewness all decrease to a particularly large extent for X_t/MV_{t-1} .

Two ownership variables, (i) the percentage of equity held by directors, their families or associates and (ii) substantial shareholders (over 5% of equity) were collected from Crawford's *Directory of City Connections*. The former was labelled inside ownership or IN and the latter outside blocks or OB. A third variable to represent diffuse outside ownership was constructed as $100 - IN - OB$, and was labelled DOO. The sample means were estimated as 19.3%, 17.4% and 63.4% for IN, OB and DOO, respectively (see Table 3). Since Warfield et

al. (1995) combine IN and OB in their measure of managerial ownership we can only impute the average of DOO to be 83.6% in their sample. Plenborg et al. (1998) did a similar study to that of Warfield et al. (1995) using Danish data. They, in contrast to Warfield et al. (1995), find a negative relation between (IN+OB) and ERC. It is worth noting that the averages for IN, OB and DOO in their sample are 31%, 28% and 41%. It is clear that ownership is extremely diffuse in Warfield et al.'s US-based sample and quite concentrated in the Danish sample. Our UK sample lies approximately midway between both extremes. Its distribution of managerial ownership is not dissimilar to that of Faccio and Lasfer's (1999) UK sample of 1,650 non-financial firms collected in 1996/97. These authors report an average (median) of 16.7% (7.9%) for IN.⁶

Having collected the necessary data to estimate both the informativeness of earnings and ownership structure we are now ready to investigate the relation between both. We can adopt either the one-stage approach of Warfield et al. (1995) or the two-stage approach of Plenborg et al. (1998). The latter approach involves first estimating an ERC for each firm in the sample and, secondly, estimating regressions where average measures of ownership structure over the sample period are the explanatory variables for the ERCs measured in stage 1. The alternative approach is to use an ownership interaction term in the panel data model, estimating the ERC and test for the significance of this coefficient. If one considers that ownership structure should explain only the cross-sectional variation in the informativeness of earnings across firms the two-stage approach should be chosen. If ownership structure is hypothesised to affect time-series variation in the informativeness of earnings within firms, as well as variation across firms, the one-stage approach might be preferred.

There is an additional reason why the two-stage approach may be superior in the context of this study. Examining the differential information hypothesis requires a measure of ownership structure that pertains to the period over which information is disseminated regarding subsequent earnings. Also, because it may take several periods for ownership changes to be fully reflected in changes of price anticipation of earnings a point estimate of ownership structure is inappropriate here. There will be a sharper contrast in information environments across firms than within the same firm

⁵ Dead companies are those which were no longer quoted on the International Stock Exchange, in London, as at September 1997 when this data was collected. Some would have ceased to be quoted during the sample period and others afterwards.

⁶ However, Short and Keasey (1999) (13.3%) and Young (1998) (10.4%) report lower average values for inside ownership in their UK samples.

Table 2 Summary statistics for dependent and independent variables used for estimating earnings response coefficients						
	Contemporaneous model		Model including one year of leading returns		Model including two years of leading returns	
Panel A: Before elimination of extreme outliers						
	CG _{it-1}	X _{it} /MV _{it-1}	CG _{it-2}	X _{it} /MV _{it-2}	CG _{it-3}	X _{it} /MV _{it-3}
Number of firm/years	1729	1729	1693	1693	1646	1646
Mean	0.1772	0.059	0.465	0.1043	0.85	0.155
Standard Deviation	0.5755	0.5835	1.15	0.1386	1.83	0.24
Skewness	2.85	-38.9	3.69	-0.18	5.3	6.36
Kurtosis	16.31	1575.29	22.62	71.16	52.6	95.4
Maximum	6.277	1.038	12.715	1.8681	29.3	4.34
Q3	0.3563	0.1037	0.7319	0.1347	1.24	0.19
Median	0.0601	0.0797	0.1803	0.0937	0.36	0.11
Q1	-0.149	0.0575	-0.16	0.063	-0.12	0.066
Minimum	-0.94	-23.63	-0.9788	-2.15	-0.98	-1.78
Panel B: After elimination of extreme outliers						
	CG _{it-1}	X _{it} /MV _{it-1}	CG _{it-2}	X _{it} /MV _{it-2}	CG _{it-3}	X _{it} /MV _{it-3}
Number of firm/years	1698	1698	1660	1660	1571	1571
Mean	0.134	0.0735	0.357	0.102	0.57	0.135
Standard Deviation	0.445	0.083	0.798	0.118	0.98	0.17
Skewness	1.086	-3.14	1.51	1.82	1.10	1.16
Kurtosis	1.896	33.35	2.89	30.8	0.92	24.9
Maximum	1.95	0.6557	3.98	1.6	4	1.49
Q3	0.34	0.1032	0.69	0.133	1.04	0.17
Median	0.051	0.0797	0.169	0.093	0.31	0.11
Q1	-0.15	0.0576	-0.1673	0.0629	-0.14	0.065
Minimum	-0.94	-0.8205	-0.971	-0.8098	-0.98	-1.78
CG _{it-τ} is the percentage change in price for firm i between time t-τ and t (τ = 1,2 or 3). X _{it} is the earnings for firm i in year t MV _{it-τ} is the market value of equity of firm i at time t-τ.						

across time. Thus, the differential information hypothesis is unlikely to explain inter-temporal variation as well as it does cross-sectional variation in the informativeness of earnings. While we consider the two-stage approach superior, it must be recognised that ownership structure may change significantly over a seven-year period. Since, unlike Warfield et al. (1995) and Plenborg et al. (1998),

we have ownership data for each year of our sample, we also adopt the one stage approach as a test of the robustness of our main results.

The first stage in our two-stage approach involves estimating an ERC (β_i) for each firm in the sample using the following panel data regression model, which is analogous to the simple empirical model outlined in equation (3):

$$CG_{i,t-\tau,t} = \alpha + \sum_{i=2}^N \alpha_i \kappa_i + \sum_{i=2}^T \alpha_i \lambda_i + \quad (4)$$

$$\sum_{i=1}^N \beta_i \kappa_i \frac{X_{it}}{MV_{i,t-\tau}} + e_i$$

where

$CG_{i,t-\tau,t}$ is the change in price over the period $t-\tau$ to t divided by the price at $t-\tau$.

$MV_{i,t-\tau}$ is the market value of equity at time $t-\tau$.

X_{it} the annual earnings for firm i for year t .

κ_i and λ_t are dummy variables representing firm i and year t respectively.

N and T are the number of firms and years in the sample respectively.

The model allows for cross-sectional variation in the ERCs and for both time-series and cross-sectional variation in the intercept.

The predictions outlined in Table 1 are tested using the ownership variables to explain cross-sectional variation in the ERCs estimated by equation (4). Cross-sectional variation in both ownership structure and ERCs may be mutually correlated with a number of firm characteristics. On the basis of prior literature, four other factors found to be related to ERC are identified and used as additional explanatory variables for ERC in multiple regressions. The factors identified are Earnings Persistence (Kormendi and Lipe, 1987), Leverage (Warfield et al., 1995), Market to Book value (Collins and Kothari, 1989) and Size (Freeman, 1987). In order to understand why these variables should be included in the model we must first consider why prices are related to earnings. Price can be viewed as the present value of expected future dividends. Thus, the relatedness of price to earnings depends on the information that the latter contain about this present value. Intuitively, the more sustainable or persistent current earnings are the greater are future earnings and dividends. Thus, ERC contains a factor that maps current earnings to future earnings which we term persistence (see in Kormendi and Lipe (1987) for a more rigorous analysis). The greater the earnings persistence the larger the ERC. It is clear from the intuition above concerning the present value of expected dividends and from equation (1) that ERC is negatively related to the cost of capital. Since leverage is positively related to the cost of equity capital we expect a negative relation between leverage and ERC. Expected growth, as proxied by the market to book ratio, is related to ERC for similar reasons as persistence i.e. the greater the anticipated earnings relative to current earnings the greater the ERC. An alternative justification for the positive relation between Market to Book Equity and ERC

comes from the Fama and French (1992) empirical asset pricing model. Here Book to Market value is positively related to the cost of equity capital so, its reciprocal, Market to Book should be positively related to ERC. Fama and French also report that size is inversely related to the cost of equity capital. Therefore, we predict that it should be positively related to ERC. However, prices may anticipate earnings more for larger firms with richer information environments (Freeman, 1987). This may bias the ERC1 for such firms downward and confound the natural positive relation between size and ERC. Size is likely to be correlated with the ownership variables so it must be included to demonstrate that ownership is not correlated with ERC simply because of its relation with size.

Earnings persistence is estimated by modifying the Ali and Zarowin (1992) technique of examining the prior year's E/P.⁷ In the current context we estimate each firm's maximum and minimum E/P ratio, based on 30 June prices and prior December earnings, over the period 1985 through 1991. The 40% of the sample which had the largest difference between the maximum and minimum are deemed to have transitory earnings and a dummy variable is constructed to represent this persistent/transitory dichotomy.⁸ Leverage is estimated as book value of debt over the market value of equity plus the book value of debt. Size is the natural log of the market value of equity.

We then estimate the following three regression models:⁹

$$ERC_{Ti} = \gamma_0 + \gamma_1 OB_i + \gamma_2 SIZE_i + \gamma_3 PER_i + \gamma_4 LEV_i + \gamma_5 GROW_i + u_i \quad (5)$$

$$ERC_{Ti} = \gamma_0 + \gamma_1 DOO_i + \gamma_2 SIZE_i + \gamma_3 PER_i + \gamma_4 LEV_i + \gamma_5 GROW_i + u_i \quad (6)$$

$$ERC_{Ti} = \gamma_0 + \gamma_1 OB_i + \gamma_2 DOO_i + \gamma_3 SIZE_i + \gamma_4 PER_i + \gamma_5 LEV_i + \gamma_6 GROW_i + u_i \quad (7)$$

Where:

ERC_{Ti} is the earnings response coefficient for firm i , computed with $T-1$ leading returns.

$SIZE_i$ is the natural log of a company's market value.

PER_i is the earnings persistence of company i .

⁷ This technique is based on the notion that extreme E/P ratios occur when a significant portion of earnings are transitory.

⁸ Persistence was also estimated as the slope coefficient, b , in the regression $E_{it}/P_{it} = a + b(E_{it-1}/P_{it-1}) + e_{it}$. This made little difference to the results.

⁹ We also estimated more detailed models where OB was replaced by IN and DOO in equation (5) and DOO was replaced by IN and OB in equation (6). The results are consistent with those reported.

Table 3
Summary statistics for variables used in regressions explaining cross-sectional variation in ERC

	<i>N</i>	<i>Mean</i>	<i>Median</i>	<i>Maximum</i>	<i>Minimum</i>	<i>Standard deviation</i>
IN _{<i>i</i>}	262	19.3	8.6	80	0	21.3
OB _{<i>i</i>}	262	17.4	12.6	74	0	15.4
DOO _{<i>i</i>}	262	63.5	63.6	99.99	10.9	23.3
LEV _{<i>i</i>}	262	0.56	0.46	4.1	0	0.5
GROW _{<i>i</i>}	262	2.56	2.0	10.15	0.3	1.8
LS _{<i>i</i>}	262	10.9	10.8	15.8	7.5	1.8
EP _{<i>i</i>}	262	0.05	.07	0.5	-2.9	0.2
ERC1 _{<i>i</i>}	261	5.93	5.35	27.02	-14.67	6.67
ERC2 _{<i>i</i>}	258	8.04	6.93	37.31	-5.2	6.5
ERC3 _{<i>i</i>}	259	6.5	5.59	43.22	-9.1	6.25

IN_{*i*} is the average percentage of shares beneficially owned by the directors or their families in each firm, *i*, over the period of the study.

OB_{*i*} is the percentage of the firm owned in blocks of more than 5% by outsiders. This is measured in the same way as IN above.

DOO_{*i*} is a measure of diffuse outside ownership it is 100% less (IN_{*i*} + OB_{*i*})

LEV_{*i*} is the book value of debt, over the market value of equity plus the book value of debt. The number summarised in the table is the average (across time) for each firm, *i*, in the sample.

GROW_{*i*} is the average market to book value ratio over the period 1985–1991.

LS_{*i*} is the average of the natural log of company *i*'s market value over the 1985–1991 period.

EP_{*i*} is the earnings to price ratio and is the basis of the dummy variable for earnings persistence.

ERC1_{*i*} is the earnings response coefficient estimated by contemporaneous return-earnings regressions (Equation 4) for each firm, *i*.

ERC2_{*i*}/ERC3_{*i*} is the earnings response coefficient estimated by return-earnings models with one and two years of leading returns, respectively (Equation 4) for each firm, *i*.

LEV_{*i*} is the Leverage of company *i*.

GROW_{*i*} is the market to book value ratio of company *i*.

Equation (6) is motivated by the earnings manipulation hypothesis and equation (5) by predictions pertaining to the information environment. Equation (7) tests both hypotheses simultaneously. For parsimony we only report the results of equation (7).

The ERCs estimated using equation (4) are outlined in Table 3. This table reveals that one extreme outlier was eliminated for ERC1, four outliers from ERC2 and three from ERC3 for the regression analysis.¹⁰ Summary statistics for the other variables used in the estimation of equation (7) are also outlined in Table 3.

The one-stage approach involves estimating the following panel data models which include interaction terms for ownership variables.

$$CG_{it-\tau,t} = \alpha + \sum_{i=2}^T \alpha_i \lambda_i + \beta_1 \frac{X_{it}}{MV_{t-\tau}} + \quad (8)$$

¹⁰ Inferences are unaffected by the inclusion or exclusion of these outliers.

$$\beta_2 \frac{OB * X_{it}}{MV_{t-\tau}} + \beta_3 \frac{DOO * X_{it}}{MV_{t-\tau}} +$$

$$\beta_4 \frac{LEV * X_{it}}{MV_{t-\tau}} + \beta_5 \frac{GROW * X_{it}}{MV_{t-\tau}} +$$

$$\beta_6 \frac{SIZE * X_{it}}{MV_{t-\tau}} + \beta_7 \frac{PER * X_{it}}{MV_{t-\tau}} + et$$

Notation is as for equation (4). The firm/year subscripts on the interaction terms are suppressed for simplicity.

The coefficients of interest are β_2 and β_3 . These can be interpreted in a similar manner to γ_1 and γ_2 in equation (7). However, while γ_1 and γ_2 reflect just cross-sectional variation in ERC due to ownership, β_2 and β_3 also reflect inter-temporal variation.

4. Results

The results of our two-stage tests, where ERCs are explained by ownership structure, are reported in Table 4. Since the test of White (1980) reveals no evidence of specification error, all inferences are based on OLS standard errors.

Table 4
Cross-sectional analysis

$$ERC_{it} = \gamma_0 + \gamma_1 OB_i + \gamma_2 DOO_i + \gamma_3 SIZE_i + \gamma_4 PER_i + \gamma_5 LEV_i + \gamma_6 GROW_i + u_i$$

Dep. Var. (Obs)	γ_0	OB	DOO	SIZE	PER	LEV	GROW	R-Squared
ERC1 (261)	-1.00 (-0.4)	-0.06* (-2.2)	-0.006 (-0.25)	0.42 (1.52)	4.6** (5.6)	-1.6* (-2.12)	0.7** (3.3)	26.87
ERC2 (258)	2.1 (0.8)	-0.02 (-0.9)	-0.054* (-2.4)	0.6* (2.2)	3.7** (4.6)	-2.6** (-3.5)	0.9** (4.1)	25.12
ERC3 (259)	3.16 (1.24)	0.013 (0.49)	-0.07** (-3.1)	0.57* (1.99)	2.68** (3.17)	-1.94* (-2.5)	0.3 (1.36)	13.6

ERC_{it} – is the earnings response coefficient for firm i, computed with T-1 leading returns.

IN_i is the average percentage beneficially owned by the directors or their families in each firm, i, over the period studied.

OB_i is the percentage of firm i owned in blocks of more than 5% by non-directors. It is measured in the same way as IN above.

DOO_i – is a measure of diffuse outside ownership it is 100% less (IN_i + OB_i)

SIZE_i – the average of the natural log of a company i's market value over the 1985–1991 period.

PER_i – a proxy for earnings persistence. It is a dummy variable based on the ranks of the difference between the maximum and minimum E/P ratio over the period. Those firms who are ranked in the top 40% are deemed to have transitory earnings. D=0 if earnings are deemed transitory and 1 otherwise.

LEV_i – is time-series average of the book value of debt, over the market value of equity plus the book value of debt for company i.

GROW_i – the average market to book value ratio for company i over the period 1985–1991.

T-statistics are in parentheses.

** – significant at the 1% level.

* – significant at the 5% level.

The differential information hypothesis suggests that estimates of ERC1 are biased and this bias is related to ownership structure. This bias in estimates of ERC1 may confound tests of the earnings manipulation hypothesis. Consequently, we begin with the differential information hypothesis and its association with ownership structure. Panel I of Table 1 outlines that ERC1 is predicted to be negatively related to OB.

The differential information hypothesis is supported by the significant negative coefficient on OB when ERC1 is the dependent variable. The coefficient on DOO changes from being insignificant where ERC1 is the dependent variable to being significantly negative where ERC2 or ERC3 is the dependent variable. Thus, the earnings manipulation hypothesis is supported, but only after the differential information hypothesis is controlled for.

The results of our one-stage tests are outlined in Table 5. This Table contains the estimated coefficients of regression models based on equation (8). Panel A outlines contemporaneous OLS regressions similar to those of Warfield et al. (1995).

However, they only measure ownership structure in one year and have only one ownership variable, so instead of Warfield et al.'s OWN_i we have OB_{it} and DOO_{it}. The coefficient on DOO is significantly negative in panel A providing support for the earnings manipulation hypothesis. The lack of

unequivocal evidence in favour of the differential information hypothesis may seem surprising, given the results of our two-stage procedure above. However, it should be remembered that the ownership variables in equation (8) are contemporaneous with earnings (year t). The relevant information regarding ownership structure for testing price anticipation would be that which existed one or two years prior to year t. The use of contemporaneous ownership variables will therefore mitigate against finding support for the differential information hypothesis. To examine this further we recalculate the annual ownership variables as the average of the contemporaneous amount and that of one year prior to earnings. For example in the case of DOO: $DOO = (DOO_{it} + DOO_{it-1})/2$. Panel B contains the results from re-estimating a contemporaneous version of equation (8) with these modifications to the ownership variables. In this case none of the coefficients on the ownership variables are significant. We interpret this as evidence that the differential information hypothesis is confounding the managerial manipulation hypothesis. To confirm this interpretation we remove the bias in ERC due to price anticipation of earnings in the manner discussed above. That is, we re-estimate the equations outlined in Panel B with a year of leading returns in the dependent variable and re-scale the independent variables by MV_{t-2}

Table 5
Panel data analysis using annual ownership data (Equation 8)

$$CG_{it-\tau} = \alpha + \sum_{i=2}^{\tau} \alpha_i \lambda_i + \beta_1 \frac{X_{it}}{MV_{t-\tau}} + \beta_2 \frac{OB * X_{it}}{MV_{t-\tau}} + \beta_3 \frac{DOO * X_{it}}{MV_{t-\tau}} + \beta_4 \frac{LEV * X_{it}}{MV_{t-\tau}} + \beta_5 \frac{GROW * X_{it}}{MV_{t-\tau}} + \beta_6 \frac{SIZE * X_{it}}{MV_{t-\tau}} + \beta_7 \frac{PER * X_{it}}{MV_{t-\tau}} + it$$

Panel A: Contemporaneous return and ownership (i.e. CG_{it-1} ; OB_{it} ; DOO_{it})

β_1	β_2	β_3	β_4	β_5	β_6	β_7	R^2
1.1 (0.007)	0.006 (1.3)	-0.01** (-3.9)	-0.2** (-3.4)	0.3** (5.8)	0.02 (0.46)	2.18** (11.3)	47.5%

Panel B: Contemporaneous return and average ownership over years t and $t-1$

(i.e. CG_{it-1} ; $OB_{it}=(OB_{it}+OB_{it-1})/2$; $DOO_{it}=(DOO_{it}+DOO_{it-1})/2$)

β_1	β_2	β_3	β_4	β_5	β_6	β_7	
2.0** (3.7)	0.005 (0.9)	0.0001 (0.02)	-0.24** (-3.6)	0.45** (7.1)	-0.11 (-1.8)	1.9** (9.0)	-

Panel C: One year of leading returns and average ownership over years t and $t-1$

i.e. (CG_{it-2} ; $OB_{it}=(OB_{it}+OB_{it-1})/2$; $DOO_{it}=(DOO_{it}+DOO_{it-1})/2$)

β_1	β_2	β_3	β_4	β_5	β_6	β_7	
3.43** (6.0)	-0.27** (-3.8)	-0.03** (-5.2)	-0.62** (-7.2)	0.18** (5.3)	0.052 (0.88)	3.0** (13.8)	-

Test statistics are in parentheses. Panel A is estimated using OLS while Panels B and C are estimated using a GLM technique.

** – significant at the 1% level.

* significant at the 5% level.

instead of MV_{t-1} .

The results of these regressions are outlined in Panel C of Table 5 and again support the managerial manipulation hypothesis as well as our interpretation of the confounding effect of the differential information hypothesis in panel B. The coefficient on DOO is significantly negative confirming the result in the two-stage procedure above. The significant negative coefficient on OB in row 3 is unexpected. This is attributed to the negative correlation of OB with IN, having a major impact once DOO is controlled for. This suggests that management ownership (IN) is more important than OB in preventing opportunistic manipulation of earnings. This is confirmed by replacing OB by IN in equation (8) and finding the expected significant positive coefficient on the latter. DOO remains significant regardless of whether IN or OB is used as the second ownership variable in equation (8).

Since overlapping data is used in the models that contain leading return we do not use OLS for any of the models reported in Panel C of Table 5. Instead we use a GLM approach (see Liang and

Zeger, 1986) to estimate equation (8). We allow for autocorrelated residuals across years within each firm. To be consistent the results outlined in Panel B are also estimated in this way. In addition, we estimate the regression equations in Panels B and C using GLM and the robust variance estimates of Huber (1967) and White (1982) and also OLS. Inferences are completely unaffected by the procedure used.

Both our one-stage and two-stage approaches yield consistent results. The managerial manipulation hypothesis is, clearly, supported by both. The strength of our evidence concerning the differential information hypothesis depends on whether ownership is measured as a point estimate for a single year, contemporaneous with earnings, or an average over a period of time. Price anticipation will depend on the ownership during the period prior to the release of earnings itself. In addition, there will be a lagged effect of ownership on price anticipation of earnings further confounding an analysis of the differential information hypothesis when ownership is measured at a single point in time. Thus, it is only when ownership structure is

measured over at least two years that evidence consistent the differential information hypothesis is found.

5. Conclusions and implications for future research

Ownership structure has a bearing on information flows and their manipulation. Accordingly, it impacts on the return-earnings association through its relation with the incentives and possibilities for opportunistic earnings manipulation as well as its relation with the existence of alternative information sources that allow price anticipation of accounting earnings. We provide evidence that the capital market's interpretation of accounting earnings is conditional on the incentives and opportunities for earnings manipulation. Specifically, we report that the responsiveness of returns to earnings is inversely related to the percentage of the firm diffusely held by outsiders. We also report evidence that price anticipation of earnings is increasing in the concentration in outsider ownership.

In this paper we have considered the informativeness of earnings conditional on ownership structure. However, it should be recognised that ownership structure may interact with a company's other corporate governance mechanisms. While the relation between governance mechanisms such as board structure and audit committees are beyond the scope of this paper their influence on the market's interpretation of accounting earnings is clearly worthy of future research. While our measurements of ownership structure are consistent with prior literature and our results are robust to many variations of their measurement, further research using more refined measurements may prove fruitful. For example, institutional ownership, family ownership, and ownership by other public companies may have implications for the information flows and corporate governance of companies. Also different metrics (e.g. Herfindahl-based metrics) of ownership structure might provide additional insights.

This article reinforces the notion that the market's interpretation of accounting information is conditional on the other non-accounting information available to it. Thus, it is dangerous to draw inferences from simple return-earnings models that do not have general or specific controls for the context in which accounting information is interpreted. For example, the ownership structure of firms differs substantially from country to country. The results reported here along with those reported by Warfield et al. (1995) for the US, and Plenborg et al. (1998) for Denmark, suggest the relation between accounting earnings and security returns differs across national boundaries not just because of different accounting practices but also

because of disparate ownership structures. Thus, any comparative international studies involving the return-earnings relation should be cognisant the differences in corporate governance structures that endure across national boundaries. Also, the finding that the informativeness of accounting earnings (ERC) is related to ownership structure in a manner which reflects opportunities and incentives for the manipulation of accounting earnings has implications for researchers studying the relation between corporate governance and earnings management. Given the many methods available to manage earnings is it useful to have an, albeit indirect, method that provides evidence of earnings management without the researcher having to specify (or speculate on) the precise earnings management method used.

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Measurement of *de facto* harmonisation: implications of non-disclosure for research planning and interpretation

Aileen Pierce and Pauline Weetman*

Abstract—Index-based harmonisation measurement techniques using company accounts data have been developed in prior research. Although the results of applying such measures have been reported in the literature as indicating actual levels of financial reporting harmony, such conclusions have not always been justified. In the first instance, it can be argued that the limitations of the indices as measures of financial reporting harmony in situations of non-disclosure were not always appreciated or highlighted. Secondly, data used for the purpose of measuring harmony was not always sufficiently robust to support the conclusions drawn. In this study, a generalised formula is presented, combining different categories of non-disclosure. It is reconciled to special cases derived in previous research and is then applied to company accounts data, which is sufficiently refined in detail to form a basis for answering illustrative exploratory research questions relating to the level of harmony and harmonisation trends. The specific analysis relates to deferred tax accounting in Ireland and Denmark over a period of eight years. Statistical analysis reinforces a discussion that warns researchers of the potential variations in results. Conclusions are drawn that the state of harmony is better estimated when the data is analysed to distinguish applicable from not-applicable cases of non-disclosure, and the index formulae applied are adjusted appropriately in both the numerator and the denominator. However, caution remains necessary where the non-disclosure level is relatively high.

1. Introduction

Non-disclosure has posed a significant limitation to the interpretation of empirical testing of *de facto* harmonisation of external financial reporting within and between countries. In some cases the item under investigation is not applicable to the company; in other cases the item is applicable but not disclosed. Archer et al. (1995) developed a method of calculating the combinations-based between-country *C* (*BCC*) index that takes account of non-disclosure of applicable cases. Their ideas were taken up by Morris and Parker (1998), specifying *BCC* and van der Tas *I* indices for each type of non-disclosure.¹ Morris and Parker explored the comparative statistical properties of the measures of international harmony by modelling the effect of non-disclosure as the number of countries under comparison is increased on a cross-sectional basis.

Their models took the limiting assumptions either that all non-disclosing companies are in the category 'not applicable', or else all are in the category 'applicable but not disclosed'.

This paper builds on the work of Archer et al. (1995) and Morris and Parker (1998) by applying a generalised formula for the *BCC* index, in which the non-disclosure is a mix of applicable and not-applicable cases. It uses real data where non-disclosures are partitioned into recognition and measurement categories in order to narrow down the 'applicable' and 'not-applicable' non-disclosures. The resulting details allow statistical analysis of index data changing over time. The overall contribution is to propose methods of improving the conduct of future empirical studies in measurement of harmonisation, and to provide a basis for informed understanding of the trends of harmonisation reported in studies conducted previously.

In offering empirical illustration, the paper uses primary data generated specifically for the purpose of exploring aspects of non-disclosure, rather than following the common practice of previous papers in using secondary data generated originally for other purposes. It is confined to a two-country

*The authors are, respectively, at the Department of Accountancy, University College Dublin, and the Department of Accounting and Finance, University of Strathclyde. They are grateful for access to Danish data provided by the late Dr. Merete Christiansen and her colleagues in Copenhagen Business School. The paper has benefited from useful discussions with Professor Stuart McLeay of the University of Wales and Mr Tony Brabazon of University College Dublin. The authors also wish to acknowledge the helpful comments and suggestions made by the editors and two anonymous reviewers. Correspondence should be addressed to Dr Aileen Pierce, Department of Accountancy, University College Dublin, Belfield, Dublin 4, Ireland. Tel: +353 1 716 4745. Fax: +353 1 716 4767. E-mail: aileen.pierce@ucd.ie

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¹ Morris and Parker showed that the *I* index can be modified to allow for applicable non-disclosure as a general case. However, the modification to the *I* index for not-applicable non-disclosure cannot be extended beyond two countries (Morris and Parker, 1998: 82). Accordingly it is not discussed further in this paper.

comparison by the availability of primary data in the detail required.

The first research question addressed in this paper relates to cross-sectional analysis:

- How is measurement of *de facto* harmony at any point in time affected by non-disclosure being due to a mixture of applicable and not-applicable cases?

It has been shown by analysis of various versions of the concentration indices that harmonisation trends indicated by those indices can be distorted by the impact of improved disclosure over time (Archer et al. 1996). The potential for further exploration of that distortion leads to the second research question of this paper, which relates to trend analysis:

- How is measurement of *de facto* harmonisation over a period of time affected by non-disclosers being subsequently classified as disclosers?

The paper proceeds by discussing models drawn from the literature which have been proposed previously for dealing with non-disclosure in the measurement of harmonisation. A formula is presented for calculating a *BCC* index where both types of non-disclosure are found within one sample. A longitudinal study is presented of the disclosure of accounting policy information relating to deferred taxation in two countries, Ireland and Denmark, using a database of information taken from company accounts. This allows a deeper understanding of the complexity of non-disclosure than has been possible in previously reported research. The results point to a need to take considerable care in interpreting the results of exercises to measure *de facto* harmonisation of financial accounting practices. Implications for policy making are also considered. For example, where 'not-applicable' is the appropriate categorisation, there may be a dilemma for harmonisation measurement depending on whether the preference is for a measure of harmony in the population in general, or a measure of harmony among those companies for which the item is relevant (Morris and Parker, 1998: 85).

2. Prior research

Harmonisation measurement techniques using indices have developed in two strands: concentration indices (*H*, *I*) and indices based on comparable pairs (*C*). These indices range in value from zero, indicating total lack of harmony, to one, indicating complete harmony. *H* and *C* can be used to measure harmony *within* individual countries (national harmony), whereas *I* and *C* can be used to measure harmony *between* two or more countries (international harmony) (van der Tas, 1988, 1992). A refinement of the *C* index distinguishes

within-country (*WCC*) from between-country (*BCC*) effects (Archer et al., 1995). The *BCC* and *I* indices are competing measures of international harmony with the *BCC* possibly the superior index because of its greater stability as the number of countries involved increases (Morris and Parker, 1998).

Non-disclosure poses a problem for harmonisation measurement (Archer et al., 1995; Morris and Parker, 1998). Archer et al., (1995) distinguished two kinds of non-disclosures – those not applicable to the firm and those that are applicable but are not disclosed. Where a particular accounting policy is not applicable, the choices it entails are irrelevant. This means that accounts of companies for which the policy is not applicable may be validly compared (for reported results and financial position) with accounts of companies for which the policy is relevant (Archer et al. 1995; Morris and Parker, 1998).² For not-applicable cases Archer et al. (1995) proposed a 'disclosure adjusted' *C* index that recognises this 'universal comparability of not-applicable observations' (UCNA). This formula has a denominator that allows for the number of potentially comparable pairs and a numerator that assumes universal comparability. For applicable cases that are not disclosed, Archer et al. (1995: 71) suggested the use of default assumptions where possible.

Morris and Parker (1998: 80) set out a 'raw' *C* index for applicable cases that are not disclosed. In the 'raw' *C* index the denominator allows for the number of potentially comparable pairs but the numerator assumes the non-disclosers are not comparable with any of the disclosed cases. Where levels of non-disclosure of applicable items are high, raw *C* indices are overly conservative, given that they assume that each non-disclosing company is not comparable with any other company (Morris and Parker, 1998).

Archer et al. (1995) defined, but did not provide, a general formula for the disclosure-adjusted *C*. They applied their ideas to deferred tax data. Morris and Parker (1998) used a simulation study to illustrate the relationship between the *BCC* index and the *I* index and to test the statistical properties of both as the number of countries increases. The index values diverge when there are more countries and non-disclosers. They provided considerable clarification in modelling the effect of non-disclosures. This paper takes their work forward into empirical investigation, particularly where types of non-disclosure are mixed.

Prior empirical studies have either ignored non-disclosure or have formed conclusions that do not

² Consequently, each non-discloser categorised as 'not-applicable' is comparable with all other non-disclosers and with every disclosing firm for the item in question.

Table 1 Harmonisation measurement studies computing a single index measure: treatment of non-disclosers				
Study	Index calculated	% non-disclosers	Treatment of non-disclosers	Comment
van der Tas (1988)	H,I,C	Varied between 10% – 33% for UK deferred tax, not known for US and Netherlands ITC	Non-disclosers ignored	Proportion used based on companies disclosing deferred tax policy
van der Tas (1992)	C	50%+	Non-disclosers ignored	Denominator based on all comparable pairs possible from those disclosing their policies
Emenyonu and Gray (1992)	I	Up to 35%	Non-disclosers ignored	Proportions used based on those disclosing their policy
Archer, Delvaille and McLeay (1995)	C	Approximately 30%	Non-disclosers included in denominator	Denominator based on all companies in study whether or not they disclosed a policy for deferred tax
Herrmann and Thomas (1995)	I	Up to 50%	Non-disclosers ignored	Proportions used based on those disclosing, but adjustment introduced to compensate for 'zero effect'
Christiansen (1995b, 1995c)	C	Varied between 2% and 50% depending on basis of data analysis and year	<ul style="list-style-type: none">Non-disclosers included in denominatorUniversal comparability of 'not-applicables' reflected in numerator	Three indices calculated: 1. Overall C index combining recognition and measurement criteria 2. C index based on recognition only 3. C index based on measurement only
Emenyonu and Gray (1996)	I	Non-disclosure not mentioned	<ul style="list-style-type: none">Non-disclosers analysed intonot-applicable (NA)applicable but not disclosed (ND)not known whether or not item is applicable (NA/ND)	Denominator based on all companies in study whether or not they disclosed a policy for deferred tax
Adhikari and Emenyonu (1997a)	I	Varied from 8% to 60% (average 31% over 9 accounting issues)	Non-disclosers ignored	Assumption that companies classified as 'not-applicable' are comparable with all companies regardless of how they dealt with the item examined
Adhikari and Emenyonu (1997b)	I	Varied from 3% to 58% (average 30% over 10 accounting issues)	Non-disclosers ignored	NA/ND category assumed first to be NA and then to be ND, two different indices then calculated
				Detailed data not disclosed
				Proportions used based on those disclosing their policy
				Proportions used based on those disclosing their policy

take full account of the impact of non-disclosure. Table 1 summarises the extent of non-disclosure and its treatment in a number of previous studies.

Where non-disclosers are relatively infrequent they can be justifiably ignored (Morris and Parker, 1998). They were not specifically considered in measurement undertaken by van der Tas (1988, 1992). They were ignored in some other instances in order to avoid possible bias in data (Emenyonu and Gray, 1992; Herrmann and Thomas, 1995; Adhikari and Emenyonu, 1997a, 1997b), although significant levels of non-disclosure were identified in each of these studies. The detail of data used to calculate *I* indices in Emenyonu and Gray (1996) was not disclosed sufficiently to establish how non-disclosure affected index calculations in that study. Archer et al. (1995) and Christiansen (1995b, 1995c) included non-disclosers in the denominator of the *C* index but excluded them from the numerator. More detailed analysis of non-disclosers in Christiansen (1995b, 1995c) enabled the effect of non-disclosure on *C* indices to be calculated.

Where there are non-disclosers present, the formulae applied to calculate *H* and *I* indices in previous empirical research will also tend to misstate levels of harmony, because they ignore non-disclosers in both the numerator and the denominator. Both the *H* and *I* index formulae have been applied in previous studies to measure levels of harmony based only on companies disclosing accounting methods used (Emenyonu and Gray 1992, 1996; Herrmann and Thomas 1995; Adhikari and Emenyonu 1997a, 1997b; van der Tas, 1988). In omitting non-disclosers from both the numerator and the denominator of the indices, researchers applying the indices tacitly assume either that accounting choices of non-disclosers mirror those of disclosing companies, or that the accounting item under scrutiny is not relevant to non-disclosing companies. The conclusions drawn about harmony and harmonisation may be limited by such assumptions.³

Another impact of non-disclosure identified in previous research is that changes over time in levels of harmony can be caused by increased disclosure rather than by greater concentration on particular methods. Consider the case where all non-disclosers are included in the denominator of the *C* index although excluded from the numerator ('raw' *C* index). When more companies disclose the method adopted, the *C* index values are increased because additional comparable pairs arise in the numerator between these new disclosers and

previous disclosers who adopt the same methods. Despite this higher index value, an increase in underlying harmony may not have occurred because there was already an undisclosed agreement that now becomes explicit. Disclosure of a previously undisclosed method may increase the index regardless of whether or not the method has actually changed over time.

The empirical section of the paper shows the potential for misinterpretation of trends where the impact of non-disclosers is not given careful consideration.

3. Research data and method of analysis

3.1. Data

Company accounts data used for this analysis has been drawn from the annual reports of all listed companies in Ireland and Denmark which survived throughout the years 1986 to 1993. To maximise the use of available Danish data, 1986 was chosen as the starting point. Annual reports of Irish listed companies are collected in hard copy form in the Department of Accountancy in University College Dublin. Detailed analysis of this data set appears in Brennan et al. (1990, 1992). Irish banks and mineral exploration companies were excluded for consistency with Danish data. There were 42 relevant Irish companies in existence throughout the period. The Danish accounting database ACCOUNT DATA is maintained by researchers in the Copenhagen Business School. Analysis based on this data has been published previously in Christiansen (1995a, 1995b, 1995c). It provides a detailed and extensive analysis of financial statements and notes to the accounts, and is in raw data form. Electronic interrogation of the database extracts the detail required. There were 125 Danish companies in existence throughout the period chosen.

Along with the UK, Denmark and Ireland joined the EEC, as it was then known, in 1973. Comparison of Ireland and Denmark in this paper is conditioned primarily by the availability of the data, but is justified because their relatively small size permits in-depth understanding of their listed company populations and accounting policy options. Effective coverage of the population of listed companies and detailed analysis of disclosed accounting policy choices are feasible for both countries. The potential harmonising influence of the EU is counterbalanced by different environmental and cultural backgrounds, particularly economic and political ties. Previous efforts to classify countries into accounting models have put Ireland and Denmark in different groupings (Nair and Frank, 1980; Salter and Doupnik, 1992; Doupnik and Salter, 1993, 1995).

Accounting for deferred taxation was chosen because it is an item where different accounting

³ Given that the *I* index has been shown to be mathematically flawed in its original VDT form and problematic in its corrected form (Morris and Parker, 1998), this paper focuses on the *BCC* index when measuring between-country harmony.

methods are encountered. Differences in approach relate to matters of both recognition and measurement (ASB 1999, chs. 5 and 6). It is an area where standardisation was not attempted in the Fourth Directive and so potential variation within the member states of the EU remains (Archer et al. 1995). Furthermore, issues relating to deferred taxation have been explored in previous harmonisation studies (van der Tas, 1988, 1991, 1992; Archer et al. 1995; Christiansen, 1995b, 1995c). Deferred taxation has been indicated as a major cause of difference for UK companies reconciling reported domestic net income and shareholders' equity to the amounts which would be reported under US rules (Weetman and Gray, 1991; Weetman et al. 1993), and it has been indicated by European investors and corporate issuers as one of three main problem areas causing difficulties in communications with investors (Choi and Levich, 1996).

Practice is relatively unregulated in Denmark

(Christiansen, 1996) which leads to a variety of selected methods in that country. In Ireland, the existence of SSAP 15 throughout the period covered by this study leads to an expectation of relative harmony of deferred tax accounting practice (Pierce, 1996). The combination of expected variety of Danish practice and expected consistency of Irish practice provides an opportunity for in-depth evaluation of harmonisation measurement methods in both a national and an international context. Previous harmonisation studies based on deferred tax analysed accounting practices and non-disclosure in a number of different ways, depending on whether the focus was on recognition or measurement criteria and the extent to which non-disclosure was raised as an issue. Previous measurement studies that analysed deferred tax are summarised in Table 2.

Classification of disclosure and non-disclosure is a complex matter. For analysis purposes, disclosure may range from complete and unambiguous

Table 2
Harmonisation measurement studies computing single index measure and using deferred tax

Level of analysis provided Recognition Measurement	Disclosers						Non-disclosers		
	TP TP	FD		PD			NA	ND	NA/ND
		L	D	L	D				
Study									
Van der Tas (1988)*									
Van der Tas (1992)	✓	✓		✓					✓**
Archer, Delvaile & McLeay (1995)	✓	✓		✓			✓	✓	✓
Christiansen (1995b, 1995c)†	✓	✓		✓		✓	✓	✓	✓
Christiansen (1995b, 1995c)†	***	L		D		✓	✓	✓	✓
Christiansen (1995b, 1995c)†	✓	✓	✓	✓	✓	✓	✓	✓	✓

Key:

- TP** Tax payable
FD Full deferral
PD Partial deferral
L Liability method
D Deferral method
NA Not applicable
ND Not disclosed
NA/ND Not known if applicable or not

✓ Category used and observations identified.

* van der Tas (1988) dealt with: • Deferred tax in UK 1968–1980. His analysis was based on presentation in accounts, rather than recognition and measurement approaches used.
 • Investment tax credit (ITC) in Netherlands (1978–1984) and in US (1965–1984). ITC is similar to government grants.

** van der Tas (1992) used a category 'No deferred tax', without further breakdown.

† Christiansen (1995b and 1995c) included a further category FLD (FLD/L and FLD/D) to cater for a deferred tax refinement in respect of revaluation surpluses.

*** In this analysis, those not providing for deferred tax (i.e., using flow-through approach) were categorised as NA.

explanation of accounting methods adopted, through partial (although clearly incomplete) disclosure, to complete absence of information about methods used. The range (and judgments made) may be illustrated by examples from the Irish data used in this study. Company A stated specifically that it applied the liability method with partial provision. Company B used the phrase 'deferred tax is provided at the anticipated rates' which is similar to the wording of para 23 of SSAP 15 (ASC, 1985). Therefore, it indicates the liability method. Company C used the words 'applying the rate of tax applicable at the balance sheet date to the accumulated timing differences'. This may be taken to reflect a commonly accepted practice of using that rate as the best estimate of the rate applicable when the timing differences are expected to reverse (Davies et al. 1997: p.1,193) and therefore indicative of the liability method. Company D used the words 'full provision is made at the current rate' in 1987, with no indication of subsequent revision for changes in rate, and was accordingly categorised as using the deferral method. Company E did not mention deferred tax in the accounts for any of the years examined but because the company had losses and recoverable advance corporation tax throughout the period, it was categorised as 'not-applicable' throughout.⁴ In other cases, however, it was clear from the context of the annual report that deferred taxation was applicable but disclosure was incomplete.

One approach to dealing with the problem of in-

complete disclosure would be to make direct enquiry of the company. We chose not to follow that approach because we were interested in simulating the experience of the reader of the annual report who does not have privileged access to the company and relies on the published report. Another approach would be to make a default assumption. The default method is the one laid down by applicable accounting standards, relying on the assumption that the external auditor will draw attention to non-compliance with applicable standards. A default assumption could not be applied to the Danish data, because of the lack of regulation, and would have been unsuitable for the Irish data because of the flexibility of application of SSAP 15.

3.2. Analysis of non-disclosure

The classification of non-disclosure by reference to issues reflecting recognition and issues reflecting measurement of deferred tax led to the following eight categories:

- Full provision is made for deferred tax, measurement method used is not disclosed (FD/ND).
- Partial provision is made for deferred tax, measurement method used is not disclosed (PD/ND).
- Full provision including 'contingency tax' is made for deferred tax, measurement method used is not disclosed (FLD/ND).⁵
- Whether full or partial provision is made for deferred tax is not disclosed, liability method is used (ND/L).

Table 3
Analysis of taxation policy choices: Denmark and Ireland 1986 and 1993

Disclosers	1986		1993	
	Dk	Ir	Dk	Ir
TP	7	0	6	0
FD/L	20	1	57	1
FD/D	1	0	0	0
PD/L	18	16	36	21
PD/D	0	1	0	1
FLD/L	4	0	1	0
	<u>50</u>	<u>18</u>	<u>100</u>	<u>23</u>
<i>Non-disclosers</i>				
FD/ND	27	0	7	0
PD/ND	22	13	7	14
FLD/ND	0	0	0	0
ND	7	1	1	0
NA	6	2	8	3
ND/NA	2	2	2	0
TOTAL >	*114	**36	125	^40

> Danish analysis adapted from Christiansen (1995b).

* 11 companies not listed that year.

** One set of accounts missing, five companies not listed that year.

^ Two companies not listed that year.

Key to notation used in data analysis is set out in Table 4.

Table 4
Key to notation used in data analysis

TP	Tax payable only
FD/L	Tax payable plus change in full deferred tax, liability method
FD/D	Tax payable plus change in full deferred tax, deferral method
PD/L	Tax payable plus change in partial deferred tax, liability method
PD/D	Tax payable plus change in partial deferred tax, deferral method
FLD/L	Tax payable plus change in full deferred tax and tax contingency, liability method
FD/ND	Tax payable plus change in full deferred tax, measurement method not disclosed
PD/ND	Partial provision for deferred tax is made, measurement method not disclosed
FLD/ND	Tax payable plus change in full deferred tax and tax contingency, measurement method not disclosed
ND	Not disclosed (and indications that deferred tax is relevant)
NA	Not applicable, no deferred taxation
ND/NA	Not disclosed/not applicable? (Not disclosed and not clear if deferred tax is applicable or not)

- Whether full or partial provision is made for deferred tax is not disclosed, deferral method is used (ND/D).
- Policy choice is applicable but is not disclosed (ND).
- Policy choice is not applicable (NA).
- Deferred tax is not disclosed and it is not clear if it is applicable or not (ND/NA).

Data for all eight years was analysed for the overall method used and for recognition and measurement separately. An example of data for Denmark and Ireland using this scheme of analysis is reproduced in Table 3 for the start and end years, 1986 and 1993 by way of illustration. It includes six of these eight categories of non-disclosure. There

were no observations in two partial disclosure categories (ND/L, ND/D).

To avoid the substantial exclusions that are the consequence of following previous applications of index formulae, the analysis of data was disaggregated using recognition and measurement criteria, respectively. Table 3 has three categories, namely FD/ND, PD/ND and FLD/ND which are 'unknowns' at the overall level but become 'known' when recognition is taken separately. Their measurement effect is the unknown aspect. Disaggregation improves the known disclosure level for recognition. For illustration, the full details for the start and end years, 1986 and 1993, are set out in Tables 5 and 6, from which it may be seen that measurement is the main aspect of non-disclosure, with recognition being less of a problem.

The data in this study allows more detailed analysis of the impact of non-disclosure than was found in previous studies (indicated in Table 2).

3.3 Adjusting indices for not-applicable items

As a basis for comparison, formulae used in prior research were first applied to data for each of the years 1986 to 1993. The *H* index of van der Tas (1988), labelled VDT *H*, and Total *C* index (Archer et al. 1995) were used to measure national harmony.⁶ The *BCC* index of Archer et al. (1995), labelled 'ADMCL *BCC*' was used to measure international harmony.

To illustrate the effect of adjusting for NAs, and to expand on the work of Morris and Parker (1998) in an empirical setting, the *BCC* index is recalculated to incorporate the effect of 'not-applicable' accounts using the following generalised non-disclosure adjusted (GND-adjusted) formula⁷:

⁴ Irish companies with tax losses were categorised as 'not-applicable' because SSAP 15 did not generally permit a deferred asset to be created for tax losses [SSAP 15 para 31].

⁵ FLD is an abbreviation for 'tax payable plus change in full deferred tax and tax contingency'. Tax contingency refers to tax that would become payable in Denmark if certain revalued fixed assets were sold for their book value (Christiansen, 1996, Christiansen and Elling, 1993). Contingent taxes are the potential capital gains taxes which would arise if revalued land or buildings used for business purposes were to be sold at an amount in excess of cost within eight years of acquisition, or if financial investments were sold at a gain within three years of acquisition (Christiansen and Hansen, 1995).

⁶ In the context of national harmony, applying the Total *C* index or *WCC* index formula to a given data set will give the same result.

⁷ The explicit derivation of the GND-adjusted *BCC* is available from the first-named author. This formula is based on the NAA Total *C* index developed and applied in Pierce and Weetman (2000). A reconciliation of the GND-adjusted formula with the 'disclosure adjusted' and 'raw' between-country *C* index formulae presented in Morris and Parker (1998) is also available from the first-named author.

Table 5
Taxation policy choices analysed by recognition criteria: Denmark and Ireland 1986 and 1993

	1986		1993	
	<i>Dk</i>	<i>Ir</i>	<i>Dk</i>	<i>Ir</i>
<i>Disclosers</i>				
TP	7	0	6	0
FD	48	1	64	1
PD	40	30	43	36
FLD	4	0	1	0
	<u>99</u>	<u>31</u>	<u>114</u>	<u>37</u>
<i>Non-disclosers</i>				
ND	7	1	1	0
NA	6	2	8	3
ND/NA	2	2	2	0
TOTAL	<u>114</u>	<u>36</u>	<u>125</u>	<u>40</u>

Key to notation used is set out in Table 4.

Table 6
Taxation policy choices analysed by measurement criteria: Denmark and Ireland 1986 and 1993

	1986		1993	
	<i>Dk</i>	<i>Ir</i>	<i>Dk</i>	<i>Ir</i>
<i>Disclosers</i>				
TP	7	0	6	0
L	42	17	94	22
D	1	1	0	1
	<u>50</u>	<u>18</u>	<u>100</u>	<u>23</u>
<i>Non-disclosers</i>				
ND	56	14	15	14
NA	6	2	8	3
ND/NA	2	2	2	0
TOTAL	<u>114</u>	<u>36</u>	<u>125</u>	<u>40</u>

Key to notation used is set out in Table 4.

GND-adjusted BCC index

$$BCC = \frac{\sum_i \sum_j [(x_{ij}(x_{+j} - x_{ij})) + 2(x_{+ina}(x_{+j} - x_{ij})) + x_{+ina}(x_{+na} - x_{+ina})]}{\sum_i (x_{i+}(x_{++} - x_{i+}))}$$

Where

- x_{ij} = Number of companies adopting a particular method j in a particular country i .
- x_{+ina} = Total number of companies in country i for which the policy item is 'not-applicable'.
- x_{+na} = Total number of companies in all countries for which the policy item is 'not-applicable'.
- x_{i+} = Total number of companies in country i .
- x_{+j} = Total number of companies adopting a particular method j .
- x_{++} = Total number of companies including 'non-disclosers' and 'not-applicables'.

The formula is generalised because the total num-

ber of companies in the denominator includes non-disclosers and not-applicables together. The pairings in the numerator allow for the assumed comparability of not-applicables. Non-disclosers do not appear in the numerator because they cannot be assumed to be comparable with any other company.

4. Results

This section presents data on the number of companies changing from being non-disclosers to being disclosers over the period, and shows the outcome of calculations of indices based on formulae used in prior research, with possible ambiguities of interpretation to which these calculations could lead. It then presents the results of applying the GND-adjusted BCC index formula to the data, showing that this resolves the ambiguities of interpretation which may arise using the applications of prior research.

Table 7
Analysis of accounts not disclosing deferred tax accounting method used: Denmark and Ireland 1986–1993

	<i>Disclosers</i>		<i>Non-disclosers</i>						<i>Total</i>	
			<i>ND</i>		<i>NA</i>		<i>ND/NA</i>			
	<i>Dk</i>	<i>Ir</i>	<i>Dk</i>	<i>Ir</i>	<i>Dk</i>	<i>Ir</i>	<i>Dk</i>	<i>Ir</i>	<i>Dk</i>	<i>Ir</i>
1986	50	18	56	14	6	2	2	2	114	36
1987	55	22	64	15	3	3	2	0	124	40
1988	58	22	60	16	3	3	3	0	124	41
1989	82	25	35	15	3	2	4	0	124	42
1990	92	25	25	14	5	2	3	1	125	42
1991	95	23	22	14	5	4	3	0	125	41
1992	98	23	17	15	8	3	2	0	125	41
1993	100	23	15	14	8	3	2	0	125	40

Key to notation used is set out in Table 4.

Table 8
ND and ND/NA observations summarised

<i>Year</i>	<i>Denmark</i>						<i>Ireland</i>					
	<i>Overall</i>		<i>Recognition</i>		<i>Measurement</i>		<i>Overall</i>		<i>Recognition</i>		<i>Measurement</i>	
	#	%	#	%	#	%	#	%	#	%	#	%
1986	58	51	9	8	58	51	16	44	3	8	16	44
1987	66	53	10	8	66	53	15	38	1	3	15	38
1988	63	51	10	8	63	51	16	39	1	2	16	39
1989	39	31	10	8	39	31	15	36	1	2	15	36
1990	28	22	9	7	28	22	15	36	1	2	15	36
1991	25	20	6	5	25	20	14	34	0	0	14	34
1992	19	15	3	2	19	15	15	37	0	0	15	37
1993	17	14	3	2	17	14	14	35	0	0	14	35

Correlation coefficient of non-disclosure numbers with year

–0.93 –0.85 –0.93 –0.77 –0.85 –0.77

Key to notation used in title is set out in Table 4.

4.1. Non-disclosers becoming disclosers

The overall analysis of taxation policy choices in Denmark and Ireland (see sample data in Table 3) is restated in Table 7 to highlight the scale and trend of non-disclosure. All accounts classified in any of the three non-disclosure categories would be ignored in calculations of VDT *H* and *I* indices. Consequently, levels of harmony indicated would be inaccurate to a greater or lesser extent depending on the incidence of non-disclosure **and** the pattern of accounting policy choice among non-disclosers. The extent and trend of non-disclosure where deferred tax is applicable is summarised in Table 8.

It is obvious that the trend of non-disclosers becoming disclosers is more marked in Denmark than in Ireland (see Table 7), despite the negative correlations between the number of non-disclosers and the year of the observation in both countries

(see Table 8). A significant decrease in non-disclosers in Denmark occurred in 1989 and the decrease continued thereafter. This is primarily attributable to the implementation of the Seventh Directive on consolidated accounts which introduced mandatory disclosure of notes to group accounts (Christiansen, 1995c). Deferred tax analysis used in this research is based on disclosures in group accounts. Notes to group accounts were not mandatory before the implementation of the Seventh Directive which was effective for accounts beginning on or after 1 April 1991 (Christiansen and Elling, 1993). It is likely that the improved disclosure evident from 1989 reflects anticipation in Denmark of the imminent changes in disclosure requirements for group accounts.

As result of the high inverse correlation between the number of non-disclosers and the year of the observation, an apparent trend of harmonisation

over the period does not necessarily signal a real increase in harmony. The following results show that it could represent nothing more than a movement from non-disclosure to disclosure.

4.2. Levels of harmony and trends in harmonisation

H indices measuring national harmony converge towards *C* index values where the number of accounts examined is large and there are no non-dis-

Table 9
VDT *H* and ADMcL *C* indices compared for Denmark: 1986 and 1993

	1986	1993
Overall		
VDT <i>H</i>	0.316000	0.458200
ADMcL <i>C</i>	0.057444	0.289161
Recognition		
VDT <i>H</i>	0.404959	0.460295
ADMcL <i>C</i>	0.300419	0.378581
Measurement		
VDT <i>H</i>	0.725600	0.887200
ADMcL <i>C</i>	0.136935	0.565935

Figure 1
Overall VDT *H* and ADMcL *C* indices compared: Denmark

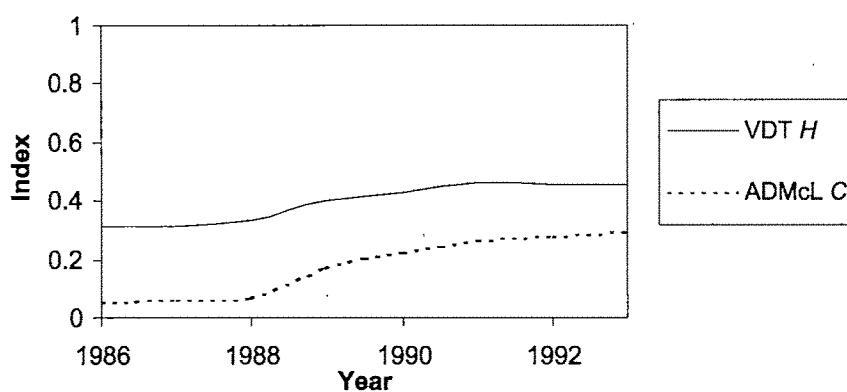


Figure 2
Measurement VDT *H* and ADMcL *C* indices compared: Denmark

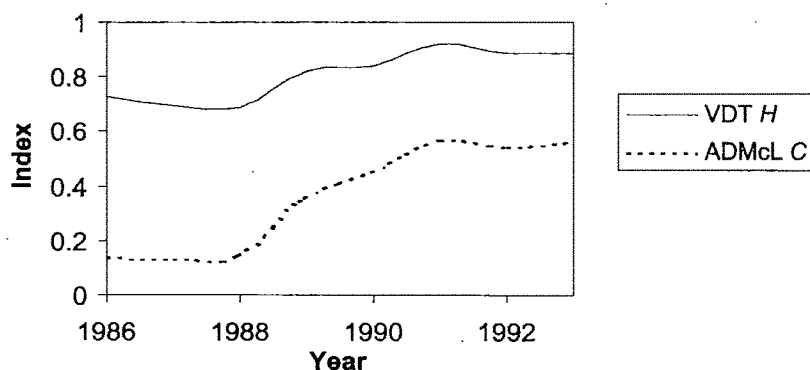


Table 10
Comparison of indices before and after adjustment for NAs: 1986 and 1993

	1986	1993
Overall		
ADMCL BCC	0.075049	0.162600
GND-adjusted BCC	0.128655	0.264200
Recognition		
ADMCL BCC	0.304094	0.322400
GND-adjusted BCC	0.400585	0.454800
Measurement		
ADMCL BCC	0.174220	0.413600
GND-adjusted BCC	0.225877	0.515200

closers (van der Tas, 1988). As a representation of national harmony, Table 9 sets out illustrations of VDT *H* and ADMCL *C* indices for Denmark for the overall method, and separate recognition and measurement bases of data analysis for the years 1986 and 1993. Figures 1 and 2 illustrate the trend of the indices over the eight years for the overall method and the measurement bases.

Absolute levels of harmony are very different for a given year, depending on whether VDT *H* or ADMCL *C* is used as a measure, and depending on the type of data analysis used. The gap between the indices narrows in the later years. The difference between *H* and *C* when recognition criteria form the basis of analysis (not illustrated here) is not as great. A research project which used only the *H* index measure would report very different findings from a research project which used only the *C* index measure, with the first overstating and the second understating the levels of harmony in Denmark. The apparent sharp increase in harmony in 1989 was due to a large number of companies becoming disclosers with a bias towards the same choice of method.

4.3. Applying the GND-adjusted BCC index

Analysis of the data shows that GND-adjusted index values are higher than their ADMCL counterparts because they explicitly allow for the comparability of all accounts categorised as 'not-applicable' with all other accounts, regardless of accounting method adopted. Sample results for 1986 and 1993 are presented in Table 10. Figures 3 to 5 illustrate the trend of the indices over the eight years.

It is evident from inspection of the graphs that there is a difference in levels of harmony for any particular year when the index is adjusted for universal comparability of NAs. The next section tests for statistical significance of the difference.

4.4. Statistical analysis

Statistical analysis, in the form of tests of signif-

icance, has not been common in previous research studies, mainly because of the limitations of the data. An exception is the use of chi-square tests⁸ (Emenyonu and Gray 1992, 1996; Herrmann and Thomas 1995; Adhikari and Emenyonu 1997a, 1997b). Statistical models of harmonisation have been developed by McLeay et al. (1999) and Archer et al. (1996). These statistical models measure a different notion of international harmony to that captured by indices.⁹ Morris and Parker (1998) examined statistical properties of existing index measures rather than applying statistical analysis to actual data to interpret results.

In this paper we are able to apply significance tests to evaluate the differences between measures. This quantifies the intuition and visual impression gained from the foregoing tables and graphs.

One question that the researcher might pose is 'Does the difference between GND-adjusted and non-adjusted indices justify the effort?' Table 11 shows there is significant difference at 5% in the BCC index for recognition, with significance at 10% for the overall deferred taxation policy.

Measurement is the only area where the conclusions from making non-disclosure adjustments are not significantly different from the unadjusted results. The evidence from Table 11 is that it is important to take note of the prior theoretical work that has developed formulae to adjust for non-disclosure.

A second question that the researcher might ask is 'Does the choice of index measure affect the perceived rate of international harmonisation over time?' If all measures were to move in parallel, al-

⁸ The chi-square test of independence (χ^2) measures harmony as perceived to be achieved when companies in each country select accounting policies with the same relative frequency.

⁹ Index measures assume that complete international harmony exists where all companies in all countries adopt the same accounting methods for similar transactions (Wallace, 1990). A statistical model developed by Archer et al. (1996) and subsequently applied in McLeay et al. (1999) measures a similar concept of harmonisation to that measured by χ^2 .

Figure 3
ADM_{CL} and GND-adjusted *BCC* indices compared: Overall

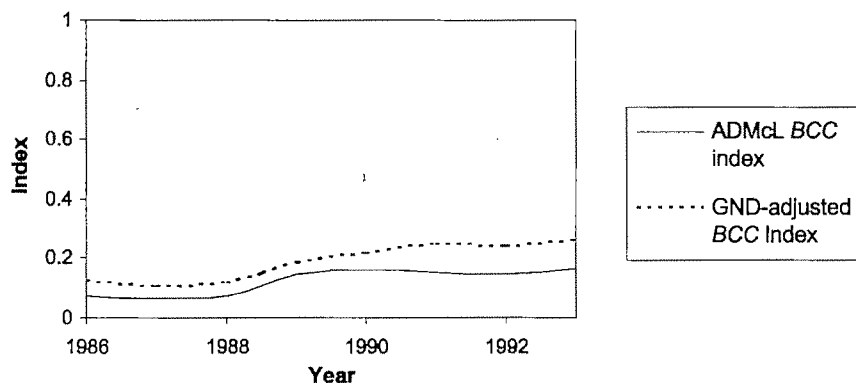


Figure 4
ADM_{CL} and GND-adjusted *BCC* indices compared: Recognition

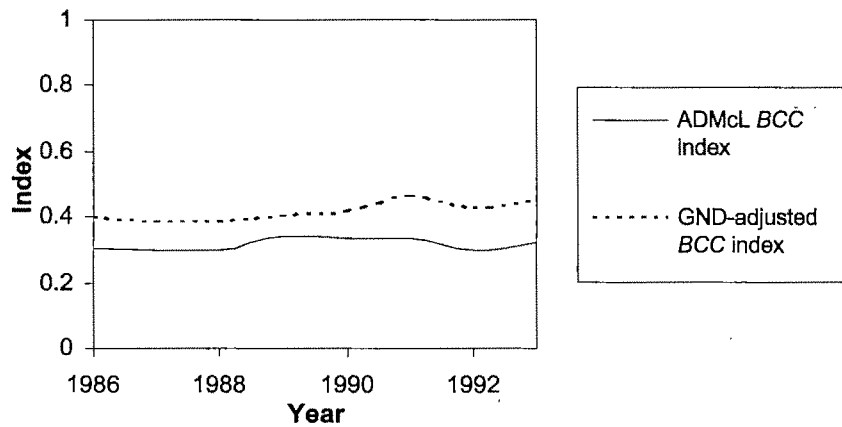


Figure 5
ADM_{CL} and GND-adjusted *BCC* indices compared: Measurement

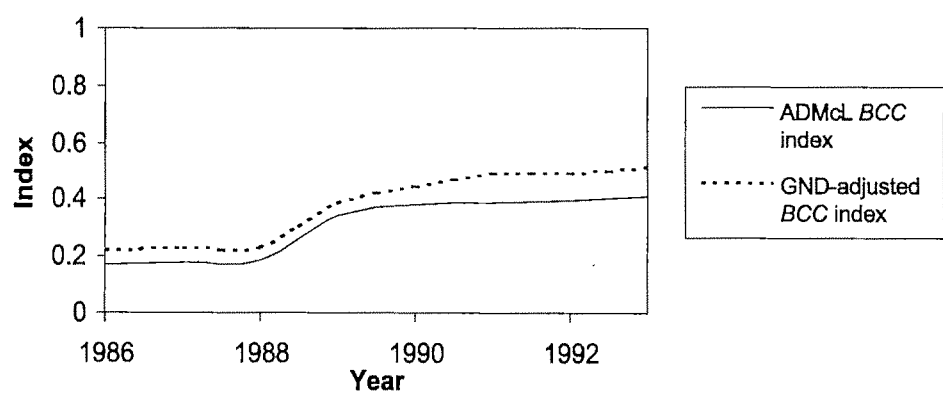


Table 11 Tests of differences in means and medians using one-way ANOVA and Mann-Whitney tests						
	Mean	Std dev	Anova F	Anova p	Median	Mann-Whitney p
Overall						
ADMcL BCC	0.122	0.043	6.6	*0.022	0.146	†0.083
GND-adjusted BCC	0.192	0.063			0.205	
Recognition						
ADMcL BCC	0.317	0.018	72.4	*0.000	0.313	*0.001
GND-adjusted BCC	0.419	0.029			0.412	
Measurement						
ADMcL BCC	0.308	0.108	1.4	0.264	0.363	0.156
GND-adjusted BCC	0.377	0.129			0.416	
Key: * Difference in median or mean is significant at $p < 0.05$; † significant at $p < 0.10$						

Table 12 Regression equations using time as the independent variable: Denmark and Ireland combined									
Figure	Year β	t-ratio	P	Intercept	t-ratio	p	R ² adj	F	p
Overall									
3 ADMcL BCC	*0.015	4.2	0.01	*0.053	2.9	0.03	†70.0	17.36	0.006
3 GND-adjusted BCC	*0.024	6.6	0.00	*0.083	4.5	0.00	†86.0	44.11	0.001
Recognition									
4 ADMcL BCC	0.003	1.1	0.33	*0.304	22.0	0.00	1.5	1.10	0.334
4 GND-adjusted BCC	*0.010	3.8	0.01	*0.375	28.4	0.00	†65.5	14.3	0.009
Measurement									
5 ADMcL BCC	*0.040	5.8	0.01	*0.126	3.6	0.01	†82.1	33.14	0.001
5 GND-adjusted BCC	*0.050	7.2	0.00	*0.153	4.4	0.01	†88.0	52.1	0.000
Key: * Coefficient significant at $p < 0.05$; † High adjusted R ² , high F, with $p < 0.05$									

beit at different levels, then the rate of harmonisation would not be affected. If the effect of the changing levels and types of non-disclosure is to give different trend lines, then conclusions on the rate of harmonisation require cautious interpretation. Ordinary least squares regression is used in Table 12 to estimate the slope of the trend line based on the equation:

$$\text{Index} = \text{Intercept} + \beta (\text{Year})$$

where ‘Year’ is coded 1 to 8.

The highest adjusted R² is found where adjusted indices are applied. These also give the highest beta coefficient (steepest slope). This might lead the researcher to conclude that significant harmonisation over time is observed. However, since there

is a high correlation between time and the rate at which non-disclosers become disclosers (Table 8), the researcher would need to carry out refinement of the research design to control for changing levels and types of non-disclosers. Alternatively the interpretation would need to have regard to the circumstances surrounding the accounting issues. In this case we know from closer perusal of the Irish data that, as the non-disclosers became disclosers, there was a tendency to favour the liability method more than others. In the light of our knowledge of the prevailing accounting guidance at that time, we surmise that the dominant usage was already the liability method, but this was not observable from disclosed information.¹⁰

5. Analysis and conclusions

This paper has asked the questions:

- How is measurement of *de facto* harmony at any point in time affected by non-disclosure being due to a mixture of applicable and not-applicable cases?

¹⁰ A strong trend over time was observed in Denmark. This could also be interpreted as a strong trend resulting from non-disclosers, who all used the same approach, becoming disclosers because of implementation of the Seventh Directive and thereby could be interpreted as confirming previous undisclosed harmony in deferred taxation accounting.

- How is measurement of *de facto* harmonisation over a period of time affected by non-disclosers being subsequently classified as disclosers?

The paper has added to the work of Morris and Parker (1998) by reconciling a generalised *BCC* index to their separate 'disclosure-adjusted' and 'raw scores' models. It has demonstrated the impact of distinguishing 'not-applicable' from 'applicable but not disclosed' categories on index calculations using a real data set where the two categories existed simultaneously, to show that there can be significant differences between the generalised formula and the specific formulae of previous research. The paper has further shown that, given sufficiently detailed data and careful analysis, the non-disclosure problem can be reduced significantly by refining the data classification (such as in separating recognition from measurement issues) and by identifying 'not-applicable' cases separately. This suggestion is offered as being preferable to the 'default' assumptions proposed by Archer et al. (1995) because it focuses on maximising effective use of the accounting information available.

This paper has provided a more informed understanding of harmonisation measurement studies conducted in the past while potentially improving the conduct of such studies in the future. Changes in indices from year to year have, in previous research (Adhikari and Emenyonu 1997a; Emenyonu and Gray 1995; van der Tas 1988 and 1992; Archer et al. 1995), been interpreted as improvements (or worsening) of harmonisation. This paper has shown that such changes are also affected by changes in disclosure levels. Changes in disclosure levels can be triggered by events that are independent of initiatives geared towards international harmonisation or national standardisation. For example, the significant increase in Danish disclosure apparently occurring in 1989 and developing thereafter is attributable to the implementation of the Seventh Directive on consolidated accounts, which introduced mandatory disclosure of notes to group accounts (Christiansen, 1995c).

There are implications for policy makers who seek to rely on harmonisation measures as justification for amending or retaining regulations directed towards harmonisation. In situations where non-disclosure exists, if it is more important for them to be able to identify the extent to which national or international comparisons can be made of one company with another, then the more conservative results derived from the combinations-based indices may be appropriate. However, the policy makers should be aware that neither approach gives the complete picture where entities do not disclose the method adopted for a relevant item.

Various approaches are available to the researcher to reduce the impact of non-disclosure on

indices. Where possible, more refined data analysis can identify companies for which the item under scrutiny is not-applicable. Combinations-based indices can then be amended to allow for the universal comparability of not-applicable observations. This mitigates the potential distorting effect of non-disclosure on these indices. If the number of 'not-applicable' cases is very much larger than the number disclosing, these particular non-disclosers will dominate *C* indices, causing them to approach 1.0. This could hide the fact of considerable variation among disclosing companies (Morris and Parker, 1998).

Finally, this paper has confirmed by empirical evidence the dilemma for harmonisation measurement in deciding whether the preference is to measure harmony of the population in general or harmony among those companies for which the item is known to be a relevant issue. It also indicates the scope for further research into accounting issues such as goodwill or research and development, where there may be even higher numbers of 'not-applicable' than were observed in the case of deferred tax in Denmark and Ireland. In such cases, the impact of adjusting *C* indices for the universal comparability of 'not-applicable' observations would be even greater than has been found in this study. Further empirical research focusing on three or more countries is desirable to illustrate the relevant mathematical and statistical features of alternative index measures in a multi-country setting.

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Book reviews

A Future for the Accountancy Profession: The Question of Closure and Integration 1957–70. Ken Shackleton and Stephen P. Walker. Institute of Chartered Accountants of Scotland, 2001. xv + 332 pp. £15.00.

The authors of this book present a most thorough and well-researched history of the various accounting societies' attempts – between 1957 and 1970 – to combine into a single body.

There had been some earlier unification. The three Scottish bodies combined in 1951. (I remember an Edinburgh partner expressing dark misgivings to me over that step – I think from social snobbery.) And the ICAEW combined in 1957 with the Society of Incorporated Accountants and Auditors, a body whose strength lay largely in the north west.

But ACCA, ICWA (as it then was), and IMTA also had aspirations to be assumed into a conglomerate of chartered accountants, and the chartered bodies themselves gave unification some thought. In part, they were prompted by a belief that disunity was untidy; the press kept asking why accountants were not a single profession like doctors and solicitors; and perhaps government too would pay more heed to a profession that spoke with one voice.

But by far the most alluring argument for unification was the belief that it could win a monopoly for accountants. A united profession might persuade government to erect a statutory 'ring fence'; no upstart group would then be allowed to set up a new accounting society, and outsiders would be forbidden to call themselves 'accountants' – perhaps even to do tax work.

Accordingly, the different bodies in 1957 began tentative discussions on the possibility of unification. Many obstacles were encountered, and ACCA faced particular difficulties. Most of its members were in industry, not auditing. If its auditing members were absorbed by a chartered institute, the rest would be left as an unhappy rump. And ACCA was planning an important missionary role in fostering the profession overseas; whereas the chartered bodies insisted that students should train in Britain, ACCA encouraged training abroad, set examinations there, and nursed national societies.

Soon after the discussions began, ACCA was asked to reveal the backgrounds of its members. A somewhat muddled set of figures suggested that hardly any members had trained in articles, and

less than a third had qualified by examination. The discussions were suspended, in an atmosphere of mistrust and animosity.

But they were resumed a year or two later. One reason for this was publication of the Robbins report, recommending a great increase in higher education. ICAEW had hitherto been content with an O-level entry standard, and was hostile to graduates and all theoretical study. (I found some of the older members contemptuous of academic work.) Now the Institute feared that the universities would lure away potential recruits, and that a stream of university-trained students of accounting might go straight into industry and perhaps join rival bodies.

This danger might be fended off and ICAEW keep its dominance if all the bodies agreed to a suitable unification scheme. One proposal was that accounting should become a two-tier profession: chartered accountants in Tier 1 would do the advanced work, while lesser persons ('licentiates') could qualify in Tier 2. This idea proved generally attractive.

Now followed endless debate and negotiation. ICAEW laboured to find a scheme that would satisfy the other bodies but maintain its dominance. All parties displayed elephantine tact, discretion, secrecy, and caution. Seemingly unaware of earlier experiences, the profession's leaders explored the various ways of reaching unification. They spent innumerable man-hours in committees, sub-committees, and working parties, and met at dinners, conferences, and social occasions.

In the hope that the government would grant the coveted ring fence, they also made somewhat ham-handed approaches to the Board of Trade, proffering the usual naïve arguments of the would-be monopolist. The mandarins were unhelpful. Their ministers were at that time strongly opposed to monopoly. And (they pointed out), many non-accountants can do accountancy work, and for lower fees than would be charged by members of a unified body; '[F]urther, the new organisation by protecting itself against outside competition, would be depriving itself of an important means of judging the effectiveness of its own standards ... the answer must be "No"'.

Although the main argument for unification had now disappeared, and there were many signs of apathy or hostility among members, the professions' leaders continued to work for unification. The case for it was argued at numerous local meet-

ings ('without much civility'), and in letters of appeal by presidents. But ICAS withdrew, and when ICAEW took a poll in August 1970, some 55% voted against. Unification was a dead duck.

The main objectors were ICAEW's young members. They had achieved qualification with arduous effort, and were disinclined to accept 'dilution' by persons who might have taken an easier route. They virulently denounced their leaders as disdainful and out-of-touch with ordinary members. (It is an interesting question why ordinary members cannot find leaders who are not disdainful.)

At present, the barriers to unification seem insurmountable. Perhaps, if all the bodies impose high entrance requirements and set examinations at a searching level, opposition by CAs will wither away, and unification will eventually take place. Perhaps.

W. T. Baxter

The Murphy-Kirk-Beresford Correspondence 1982-1996: Commentary on the Development of Financial Accounting Standards. Edited by Robert J. Bricker and Gary J. Previts. JAI/Elsevier Science, Oxford, 2002, x+223pp. US\$85/ 85.

This book is volume 5 in the series entitled *Studies in the Development of Accounting Thought*. It contains 33 letters written by Thomas A. Murphy, a former corporate comptroller and later chairman and chief executive officer of General Motors Corporation, to Donald J. Kirk and Dennis R. Beresford, the second and third chairmen, respectively, of the Financial Accounting Standards Board. Also reproduced are Kirk's and Beresford's replies, as well as several of their speeches (the speeches consuming one fifth of the book). The volume is organised chronologically, from 1982 (two years after Murphy's retirement from GM) to 1996. Murphy wrote the first letter at age 66 and the last at age 80. Although not a CPA, he majored in accounting at the University of Illinois, and he spent his entire working career at GM, initially employed as an accountant.

The correspondence provides several rays of insight. Murphy's letters vividly demonstrate the values and preoccupations of a former top executive with a blue chip corporation. His thinking, however, seems to be more representative of the gentlemanly decade of the 1950s than the go-go decades of the 1980s and 1990s. The 94 pages of Murphy's often lengthy letters sometimes make for tedious reading, and one tires of his frequently repeated criticisms of the Board's projects on accounting for inflation, pensions, not-for-profits, and stock options. In fact, Murphy never once says he favours any project that the Board has taken up. He is critical of everything, except established practice. It is evident that Murphy is a disciple of A. C. Littleton, who was his teacher at the

University of Illinois. He swears by W. A. Paton and Littleton's 1940 monograph, *An Introduction to Corporate Accounting Standards*, but mainly the sections therein that are attributable to Littleton. Murphy regards 'cost or market, whichever is lower' as an 'eternal and unassailable principle' (p. 189), and he cites the Paton and Littleton monograph as authority (p. 33). He ignores Chapter VII of the monograph, written by Paton, which criticises 'cost or market'.

Murphy, like Littleton, opposes current value accounting, places primary emphasis on the income statement, subscribes to matching costs and revenues in a stewardship reporting context, and believes that 'care should be taken not to stray from the time-proven, historical based concepts' (p. 82). He is in favour of 'objective, verifiable accounting' (p. 201), and he decries the Board's emphasis on uniformity and comparability (pp. 34, 171, 211 and elsewhere). He believes that the ultimate test of accounting is that it should be understandable to the general public, and not once does he mention a company's shareholders as a focal user group. He frequently refers to investors as a user class, and he believes that the Board should stop catering to 'the perceived needs or expressed desires of the so-called [securities] analysts' (p. 82), who, he says, are not really interested in accounting and fixate only on the short term (see also pp. 38 and 52 and elsewhere). He worries that the FASB's staff, not the Board members themselves, are developing the Board's standards (pp. 110, 118). Above all, he is committed to the view that standard setting should be carried out in the private sector. He was, in fact, one of the founding members of the Financial Accounting Foundation's board of trustees, which chose the first Board in 1972-73. That he wrote this long series of thoughtful letters over so many years demonstrates how much he cares about sound accounting.

Kirk and Beresford, in the main, respond by citing the Board's process and procedures, rather than engaging Murphy in debate over proper standards. Kirk seems to have been less patient than Beresford with Murphy's stream of critical letters. Kirk's and Beresford's letters and speeches provide insights into the operation and thinking of the Board, its difficulties with the press, and the forces that have influenced the Board's deliberations. Beresford's recitation of the lobbying efforts by the property and casualty insurance companies to persuade the SEC and Congress to exempt them from the Board's Statement No. 96 on deferred tax accounting exemplifies the resourceful use of 'political' pressure (pp. 130-132).

The editors of this volume are in evidence only on the cover and title page. One wonders why they neglected to supply a preface in which they explain why this collection of letters is important to

the accounting literature, and what readers can expect to learn from them. For a volume in a series with the title, *Development of Accounting Thought*, they should help us understand how this correspondence contributes to that development and also to the setting of accounting standards. Unaccountably, the editors do not provide a frame of reference that would enable readers to place the correspondence in any context. This they left to Eugene Flegm, a retired general auditor of GM, who, in a foreword, provides a useful biographical sketch of Murphy but only little in the way of a framework for judging Murphy's philosophy of accounting. A Littleton disciple whose views were apparently much influenced by Murphy, Flegm might have mentioned his own book, *Accounting: How to Meet the Challenges of Relevance and Regulation* (Ronald Press, 1984), which provides an extended discussion of many views that are co-incident with Murphy's.

Unhappily, the book was not as carefully prepared for publication as it might have been. I was distracted by some five dozen mostly minor editing and proofreading lapses. The index is helpful.

Rice University

Stephen A. Zeff

Beyond Results: Accountability Discretion and Performance Budget Reform. Kathleen Anders. JAI. Elsevier Science. 2001. xvi + 157pp.

Over the years there have been many attempts to reform public budgeting by switching the focus of attention from detailed control of the budgeted inputs or costs of programmes, to programme outcomes. A renewed interest in the quest for greater economic rationality can be seen in the current emphasis on 'performance budgeting' or 'budgeting for results'. This book, which is volume 11 of the *Contemporary Studies in Applied Behavioural Science* series, is based on the author's survey of the impact of performance budget reforms in the US and provides a useful evaluation of this latest attempt at reform.

There is, of course, as the book points out, nothing new in calls for this kind of budgetary reform. In the 1940s the Hoover Commission recommended the introduction of performance budgets and many of the initiatives since then, such as planning programming budgeting systems (PPBS), zero-base budgeting (ZBB) and management by objectives (MBO) have all been attempts to focus on programme outcomes, rather than simply programme costs. In the US the renewed interest in performance budgeting at the federal level is underpinned by the Government Performance and Results Act of 1993, which requires the budget requests of federal agencies to be linked to performance plans and performance indicators. According to Anders, nearly all state governments and many

local governments have implemented, to varying degrees, their own versions of the requirements of this Act. A similar philosophy can be seen in the public service agreements that form part of the UK government's comprehensive spending reviews and in the best value requirements facing local government.

If the switch to performance budgeting is to work, administrators would need to be freed from the detailed controls associated with compliance budgeting and instead be held accountable for results. In other words, the introduction of performance budgeting should result in an increase in administrative discretion. Anders hypothesises that this has not happened at state level and tests this by means of a questionnaire issued to agency administrators and central budget staff in each state. The results of the survey show that the majority of respondents did not perceive that the implementation of performance budgeting had led to increased administrative discretion. Over 90% of all states continued to use a line-item format for budget requests. There had been virtually no increase in authority to vire but there was some slight encouragement in that the states that were at a more advanced stage of implementing performance budgeting did show signs of relaxing the detailed controls.

In the discussion of these results Anders points out that the problems that earlier reform initiatives encountered are still present, in particular, the fact that budgeting is a highly politicised process. Twenty years ago Hofstede (1981) showed that where objectives are ambiguous and outputs non-measurable then political control is all there is. Accountability rests with the politicians who make the political choices, not with administrators. If the outcomes of a programme are measurable and verifiable in a clear and objective way then administrators can be held accountable because their achievements can be measured. If decisions on whether programme objectives have been met or not is a matter of political judgment, then in a democracy it is the politicians who make those judgments who are held accountable. If this is the reality that faces performance measurement, then performance budgeting will fare no better than past attempts to implement PPBS, ZBB and MBO. Van Gunsteren (1976) suggests that one of the main reasons for the failure of PPBS was that politicians saw their role and influence under threat from the data presentation and manipulation opportunities that PPBS offered to executives. It would seem unlikely that politicians will be less suspicious of this current initiative and one of the conclusions that Anders draws from her results is that 'performance budget reform, particularly with respect to change in political accountability demands, will require time, perhaps a long time'.

The book does provide a useful contribution to the current debate over performance budgeting. The numerous typos suggest a fairly relaxed attitude to proof-reading and the use of split infinitives is something of an art-form, but otherwise a very readable and informative addition to the public budgeting literature.

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Cardiff University

Maurice Pendlebury

Understanding Auditor-Client Relationships: A Multi-Faceted Analysis. Gary Kleinman and Dan Palmon. Markus Weiner, 2001. v + 164pp.

The major goals of this book are to enhance directly what is known about auditor independence and to enhance indirectly auditor independence knowledge by stimulating future research. In turn, the authors hope that pushing the independence knowledge frontiers will avert future auditor independence problems. The primary vehicle for achieving these goals is to develop a comprehensive multi-level and contextually rich model of auditor-client relationships. The primary target audiences for the book are researchers, regulators and practitioners.

It is perhaps an understatement to observe that the major focus of the book, auditor independence, is a critically important and timely topic. Independence runs to the very core of the *raison d'être* of external auditing. Moreover, auditor independence today seems to be on the minds of persons within each of the target audiences to an extent that is perhaps unequalled at any time during the past 25 years or so.

The book consists of seven chapters. In Chapter 1, the reader is introduced to auditor independence and its central role in the external audit value proposition. Various operational definitions of auditor independence are offered, several critical questions are raised and the authors' model is previewed. Chapter 2 provides an overview of several extant models of auditor-client relationships. It begins by the observation that independence is what makes the auditor-client relationship distinctive. This chapter then presents an overview first of prior non-perceptual models (e.g., De Angelo's economic model, Antle's agency theory model, Goldman and Barlev's power model) and later of prior perceptual models (e.g., Shockley's model of the factors that influence perceptions). In each instance, the overview is followed by a critical analysis of the model.

In Chapter 3 the authors commence development of their within-audit firm model of the audi-

tor-client relationship. The focus here is on forces internal to the individual like personality factors, values, motivation, aspirations, and career/life stage. Importantly, they note that these categories are not mutually exclusive. For example, motivation can be affected by career/life stage.

Chapter 4 focuses on the impact of others within the CPA firm on the individual external auditor. Importantly, the authors note that what matters here is one's social perceptions that, in turn, are influenced by the internal forces discussed in Chapter 3. One particularly useful component of this chapter is a Figure (4-1) depicting the myriad elements comprising the perceptual web in which the auditor must conduct his/her affairs.

Chapter 5 focuses on control systems in professional organisational contexts. It starts with a discussion of generic controls such as education and organisational screening, retention, and socialisation. Subsequently, the authors discuss organisational culture and structure and then the interaction of these control mechanisms and audit structure is discussed.

Chapter 6 is focused on the accounting firm within its web. Here the authors adopt a sociological and organisational theory perspective. They introduce Role Episode and Role Set Models and apply them at the level of organisations to the auditor-client relationship. The full richness and complexity of the auditor-client relationship becomes salient in this chapter as the within-audit firm and organisational context models are integrated.

Chapter 7 completes the book. This chapter reviews the development of the integrated model from the two initially separate models. The authors also compare their integrated model with prior models highlighting differences and ultimately their implications for auditor independence. Major foci here are regulation, the profession, accounting education, the CPA firm, and research. This concluding chapter is one place at which the discussion could have been a little deeper. For example, the treatment of research issues could have been significantly expanded. Consistently, the authors could have explored further conventional wisdoms that may (or may not) be true today (e.g., audits are commodities) but certainly need not be true in the future especially to the extent that they have auditor independence implications.

This book is a valuable addition to the ongoing scholarly, regulatory and practitioner dialogs on auditor independence. It is well written and easy to read. It is accessible to even neophyte members of each of the target audiences as very little prior exposure to independence issues is necessary in order to profit from reading the book.

University of Illinois
 at Urbana-Champaign

Ira Solomon

Market metrics: What shall we tell the shareholder? *Tim Amber, Patrick Barwise and Chris Higson.* ICAEW – Centre for Business Performance. ISBN 1 84152 087 X.

This research report focuses on special marketing or brand equity intangibles in large UK FTSE 350 companies. These customer reputational assets can be interpreted as the market end of the corporate value creation chain containing many other knowledge intensive assets such as management quality, R&D effectiveness, and product innovation skills.

More specifically, the researchers investigated the disclosure of information concerning brand equity in annual reports. In their review of FTSE 350 annual reports they encountered much general information about brands and marketing, but little regular and consistent reporting of market metrics. Sales volume and product distribution were the most frequent brand equity measures reported. Multiple brand companies differed little from single brand companies in their disclosures.

In their 47 face-to-face interviews with chairman and chief executives of FTSE 350 companies they found executives were satisfied with current levels of disclosure, but questioned 'boiler plating' disclosure practices and whether investors read the market information in annual reports. The executives recognised that more information could be disclosed, but perceived problems of competitive disadvantage, and of potential misuse of the extra information by the media and analysts. Their questionnaires and interviews with analysts revealed that they recognised the competitive reasons for non-disclosure, but predictably were seeking more disclosure in the form of market and brand equity metrics.

Thus the study reveals that there was some agreement between the producers and users that several metrics currently employed within companies would be of interest to analysts, and should be more widely provided in annual reports. The study also identified perceived corporate costs associated with disclosure of competitive information, of inconsistency in disclosure, and problems in the variety of marketing concepts and terminology employed.

The authors recommended that the OFR should now include more disclosure of quantitative measures or metrics for historic brand equity and market performance but that firms should not be asked to disclose marketing intentions. The metrics could include volume and value measures of market share and market size, and cost measures such as marketing investment. Other relative measures such as relative end user satisfaction or relative price could be employed as well as measures of product availability and distribution. Consistency and comparability across years was desirable, and multiple brand companies should reveal such in-

formation on the small number of brands that represented most shareholder value. Internal metrics used at board level were the logical (least cost) candidates for disclosure subject to confidentiality concerns. The disclosure could occur through either published annual report or in electronic format, with the latter also acting a medium to disclose private analysts briefings. Such metrics should be auditable and auditors should also test reasons given for non-disclosure, especially those related to adverse shareholder wealth effects. Firms should also produce a glossary of marketing and brand terminology.

The authors point out that similar metrics were proposed by the ASB in 1993 but only patchily implemented. They argue international considerations provide good reasons for a non-mandatory approach to disclosure. Nevertheless, it is clear from the report that management wish to retain ultimate control over disclosure of information about brand equity. The variety in disclosure content within similar sectors also suggests that managerial opportunism and bias may be a feature of the disclosure behaviour. Such behaviour may have to be controlled by mandatory rules. Leaving the choice of brands to report on to companies may not be in the larger public interest.

However, one of the problems with mandatory rules is that we do not have a comprehensive theory framework to derive generally applicable rules. Too little is known about how such brand equity and marketing activity play a role in the market end of corporate value creation processes and in stock market valuation. There is no common model across all companies and sectors of how the market reputational variables play a role in creating value in companies as diverse as Cadbury Schweppes or Rolls Royce, and how these variables effect stock prices. The considerable variation across sectors means that the rules could tend to be sector specific lists of intangibles and associated metrics. Despite this, the report has identified a few broad classes of intangibles and metrics that do appear cover many different sectors. Given the number of metrics involved is quite limited, a demand for mandatory disclosure should be seen as modest and unlikely to create a major costs for companies,

The authors' recommendations lay considerable stress on the disclosure of information relative to the metrics or quantitative benchmarks. They argue that these should be supplemented by text, but that text alone has little value. The problem here is that the text may reveal the larger corporate value creation story or economic transformation process. A full description of the role of intangibles in corporate value creation is no mere supplement and it is likely to have information content for stock prices by itself. Such a comprehensive

story places the metrics in a meaningful context for valuation and the metrics provide a numeric test of part of the qualitative text covering the value creation story. Clearly, disclosure should involve some consistent value creation story, the role of various intangibles including market based intangibles here, and the metrics for key intangibles both at the market end and in prior value creation processes.

If the ASB does not find such disclosure to its taste then perhaps the FSA and its UK listing authority arm should outline the broad nature of disclosure required here. These could form the basis of public announcements on say the web or through the Stock Exchange at the same time as the published financial report. Such disclosure would be consistent with FSA and UKLA issues

such as disclosing price sensitive information, avoiding grey markets, and releasing forward looking data, all associated with disclosure regulation in security markets. It would also avoid the need to conform to slow moving accounting standard setting practices, especially in an era of rapid economic change involving increasing use of knowledge intensive intangibles.

Despite these caveats, the authors have directly investigated producers and users views using a variety of research methods. They have used their access these groups to identify robust working solutions to the disclosure of information about market-based intangibles. As a result, the report is a useful example of how we can proceed in this difficult area.

University of Glasgow

John Holland

FINANCIAL REPORTING AND BUSINESS COMMUNICATION

**SEVENTH ANNUAL CONFERENCE
AT
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**Guest Speaker:
Professor Rob Gray, Director of CSEAR**

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Corporate financial disclosures in the UK, 1920–50: the effects of legislative change and managerial discretion

A. J. Arnold and D. R. Matthews*

Abstract—During the period 1920–50, the legislative approach to corporate financial disclosure in the UK was transformed. Although the changes have been well covered in the literature, the actual levels and patterns of change in UK corporate disclosures, which reflect the effects of both legislative requirements and managerial discretion, have attracted relatively little attention. The main purpose of this paper is to provide a sound empirical basis for conclusions about disclosure practices in the UK across the second quarter of the last century. To that end, the paper provides a structured discussion of changes in corporate disclosures in the UK, based upon detailed analysis of a substantial and broadly based body of corporate data for the years 1920, 1935 and 1950. These dates provide, respectively, a starting point that falls within the coverage of the main existing studies of UK disclosures of the first quarter of the twentieth century, a mid-point that allows for evaluation of the effects of the Companies Acts 1928–9 and the Royal Mail case of 1931 and a closing date that incorporates the effects of the 1948 Act. The relationship between the state and the financial community and its various agencies are clearly of importance, and particular attention has been paid to the effects of managerial discretion on disclosures, given Edwards' view that criticisms aroused by the revelations of the Royal Mail case of 1931, 'probably had a greater impact on the quality of published data than all the Companies Acts passed up to that date'.

1. Introduction

During the period from 1920 to 1950, major social and economic changes took place that led inevitably towards increased levels of public financial disclosures by the larger businesses of the time. The major companies became steadily more reliant on funds raised on the Stock Exchange and this tended to reduce the dominance of their founding families. Some companies began to think about making their financial reports more informative and interesting to readers and less legalistically minimal. Thus, an instinctive desire to keep information secret began to come into conflict with a more professional, managerial awareness of the importance of better public relations (see Matthews et al., 1998 ch. 5). In the latter part of the period, the leading accountancy body, the Institute of Chartered Accountants of England and Wales (ICAEW) started to recommend, and the London Stock Exchange began to require, accounting practices that went beyond the legislative requirements

of the state and helped to lay the ground for a Companies Act in 1948 that was to take financial reporting into an entirely new era.¹

Prior to 1947, the legislative requirements on companies to disclose information about their position and progress were extremely modest.² 'The principal enactment between 1900–40, CA 1928, appears with the benefit of hindsight, to have been an unduly tentative measure' (Edwards, 1989: 141) that did little to disturb a regulatory regime that has been seen as 'the most permissive in Europe' (Cottrell, 1980: 41). It has also been argued that, during this period, 'the legal requirements governing managerial behaviour and the disclosure of company affairs were so minimally drawn as to place the company's directors in virtually unchallengeable and unchecked possession of the company's assets' (Kennedy, 1987: 126).

Legislative requirements of course do not properly indicate the actual levels of corporate financial disclosure. Historically, British company law has merely set out a minimum standard that can be voluntarily supplemented, where reporting firms use their discretion to meet or even exceed the

*The authors are, respectively, at the University of Essex and Cardiff University. They would like to thank the Leverhulme Foundation for generously supporting this research, Jim Pirie for his work on the database concerned and two anonymous referees for their helpful comments on an earlier version of this paper. Correspondence should be addressed to Tony Arnold at the Department of Accounting, Finance and Management, University of Essex, Wivenhoe Park, Colchester CO4 3SQ. E-mail: arna@essex.ac.uk

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¹ In 1939 the London Stock Exchange required the directors of holding companies who were seeking a (new) quotation on the exchange to issue a consolidated balance sheet and profit and loss account (Edwards, 1989: 232). During the war, the ICAEW began to issue recommendations to its members on a number of significant aspects of disclosure policy.

² The Companies Act of 1947 was consolidated in 1948.

preferences and expectations of the financial community of the time. Managerial discretion in this area operates in a simple, inverse relationship with legislative requirements, so that the less demanding the legislation the greater the scope for exercising managerial discretion (and vice versa). In turn, the nature and extent of supplementary disclosures influenced and indicated the direction and scope of future legislation.

The modest nature of legislative requirements, prior to the 1947 Companies Act, clearly provided plenty of scope for discretionary supplementation of the public disclosure, and Edwards, in his *History of Financial Accounting*, suggests that the criticisms aroused by the revelations of the Royal Mail case of 1931, 'probably had a greater impact on the quality of published data than all the Companies Acts passed up to that date. In an atmosphere of soul searching, within both the accountancy profession and the business community in general, De Paula of the Dunlop Rubber Co. Ltd led the way in voluntarily devising improved financial reporting procedures ... [and] the published range of financial reports often exceeded legal requirements' (Edwards, 1989: 127–9).

Whereas the changes in legislative requirements across this important period have been well covered in the literature, the actual UK corporate disclosures of the time have attracted surprisingly little attention.³ The intention of this paper is to provide a structured discussion on the levels of, and patterns of change in, corporate disclosures in the UK across broadly the second quarter of the twentieth century, based upon an analysis of what is believed to be the largest body of corporate data collected for this purpose for the years 1920, 1935 and 1950. These dates have been chosen to provide a starting point that falls within the coverage of the main existing studies of UK disclosures from 1900–24 (Arnold, 1997 and 1998), a mid-point that allows for evaluation of the effects of the Companies Acts 1928–9 and of any change in managerial discretion due to the Royal Mail case of 1931 and a closing date that incorporates the effects of the 1948 Act on disclosure levels.

The relationship between the state and the financial community and its various agencies are clearly a matter of considerable importance and, although the main intention of the paper is to provide a broadly-based analysis of disclosure prac-

tices across the period, particular attention has been paid to the effects of managerial discretion, as an indicator of the extent to which the business sector in general (as influenced by the accountancy profession) was capable of and willing to make up for any deficiencies in government legislation. It is also hoped that this paper, read in conjunction with Arnold (1997 and 1998), will provide a reasonably sound basis for overall conclusions about disclosure practices in the UK in the first half of the last century.

This paper continues with a brief outline of the regulatory environment of the period, followed by a discussion of the main disclosure issues that have been identified in the literature. The sections thereafter identify the characteristics of the data set, and the main findings, while the concluding section of the paper provides a discussion of their significance.

2. The regulatory environment for corporate disclosures

The UK has not always had uniform legislation to govern the financial disclosures of all incorporated businesses. Industries of strategic importance (including banks, insurance companies, railways and the other major utilities) have often been the subject of their own special legislation, which has also influenced the extent and nature of discretionary disclosures in those industries (see Parker, 1990 and Edwards, 1992). Smaller businesses, such as private limited companies, have sometimes been exempt from some of the general disclosure requirements. Given this diversity, this paper concentrates upon, and draws conclusions about, only the financial disclosures of major public limited liability companies falling within the general legislative requirements of company law in the UK.

In the first half of the 20th century, there were Companies Acts in 1900, 1907, 1908, 1928–9 and 1947–8. The 1900 Companies Act required that the auditors of public companies report on the balance sheet laid before the AGM's, but it did nothing about the lack of uniformity in disclosure practices (see Parker, 1984a and Lee, 1975: 19). Although the 1907 Act, later incorporated into the Companies (Consolidation) Act of 1908, did require public companies to file an annual balance sheet containing a summary of their capital, liabilities and assets, 'giving such particulars as will disclose the general nature of such liabilities and assets and how the values of the fixed assets have been arrived at', no particular formats were prescribed, the necessary contents of the accounting reports were not specified in any detail and even a profit and loss account was still not legally required. Lee has characterised the period following the 1908 Act as one in which there was 'limited publication of financial information on a compul-

³ With the (notable) exception of Edwards (1976; 1981; 1989 ch. 11) and Stewart (1991). The Edwards 1981 and 1989 papers are, however, based largely upon the disclosures of companies in the iron and steel industry and 'because of the decision to restrict attention to a single industry any conclusions reached cannot be regarded as of general application' (Edwards, 1981: 2).

sory basis and the possibility of manipulated information being presented in published reports' and he saw 'little advance in this respect since the Joint Stock Companies Act 1844' (Lee, 1982: 88).

Additional requirements were imposed by the Companies Acts of 1928–9; annual profit and loss accounts were to be presented to members attending the annual general meeting, and fixed assets were to be distinguished from floating assets, a provision seemingly aimed at ending the practice of using a single 'omnibus' heading for all assets. In addition, corporations were required to state how they had valued fixed assets, while goodwill, patents and trademarks, shares in, amounts due to and amounts due from subsidiaries, and loans to directors and officers were each to be separately disclosed. The detailed contents of the balance sheet and profit and loss account, however, were still not specified and the latter still did not need to be audited. Nor did the 1929 Act do anything to require the disclosure of depreciation charges (see Edwards, 1981: 5) or secret reserves. Secret reserves have been defined as the 'undisclosed understatement of net worth resulting from e.g. the excessive writing-down of assets, the overstatement of provisions and liabilities and the writing-off of additions to fixed assets as expenses' (Parker, 1984b: 253; see also Chandler 1983; Dicksee 1928: 248–53), and they were an extreme form of prudence or conservatism, whose existence continued to be merely hinted at by the use of phrases such as 'sundry creditors and credit balances'.

The Royal Mail case of 1931 (*Rex v Kylsant and another*) brought the fundamental weakness of the regulatory system to the public's attention although, despite the high level of public concern, the important and related distinction between provisions and reserves was not defined authoritatively until 1943, when the ICAEW issued *Recommendation on Accounting Principles 6*. That same year, the Cohen Committee on Company Law Amendment was also established (see Bircher, 1988a: 116–9; Stewart, 1991: 44–5) and, in the context of post-war political change, their recommendations, strongly influenced by the views of the ICAEW, had considerable influence on the next Companies Act.

In 1948, the state passed a substantial piece of legislation, an Act making major alterations to the financial reporting practices and disclosures of limited liability companies:

- all companies now had to circulate (and file with the Registrar of Companies) a profit and loss account as well as a balance sheet. Both statements had to be audited and reported on;
- consolidated accounts were made the specified form of group reporting and were to be audited;
- more satisfactory distinctions between reserves

and provisions were instituted, and the existence of secret reserves was effectively outlawed (except in the case of banking, insurance and shipping companies) by the requirements that fixed assets be shown at cost or valuation, that provisions for depreciation and the charge for the year be separately disclosed, that reserves be distinguished under separate headings and that transfers to and from reserves and provisions be disclosed;

- the required disclosures were specified in far more detail than hitherto and included the identification of directors remuneration and tax provisions and a requirement that separate figures be shown for the cost of, and aggregate depreciation charged on, fixed assets.

3. Disclosure issues identified in the existing literature

A reading of the relevant literature suggests that the most important disclosure issues during the period 1920–50 were:

- the overall trends in disclosure levels and quality;
 - the importance of discretionary supplementation of statutory requirements;
 - the extent of the variations between companies.
- There were also five more specific financial reporting areas of importance:
- the forms of accounting for investments in other companies;
 - the use of omnibus headings for large groups of assets;
 - accounting for fixed assets (and the related problem of depreciation);
 - secret reserve accounting;
 - the treatment of taxation.

Overall trends in disclosure levels and quality

There appears to be something of a consensus in the literature that, in the years up to 1925, accounting information was becoming less informative (Stewart, 1991: 38; also Edwards, 1976: 291; Kitchen, 1979: 98–100; Edey, 1979: 226–7; Arnold, 1997: 161), while Edwards has also concluded that, for the period 1900–40 'overall there was a *gradual* trend towards increased disclosure', with much of this coming in the late 1930s (Edwards, 1989: 142 and 1981: 50). The provisions of the 1948 Act were almost bound to ensure that disclosure levels rose over the first half of the 20th century, but analysis of the data for 1920 and 1935 should help to provide more information on the pattern of changes during this period.

The importance of discretionary supplementation of the statutory requirements

Until the late 1940s, legislation required only modest levels of disclosure and Hannah has been highly critical of the consequent lack of informa-

tion provided to shareholders (Hannah, 1974: 77). During the 1920s, a number of companies began to provide some form of consolidated accounts, well ahead of legislative requirements (Edwards, 1989: 228). Also, from 1933, Dunlop took something of a pioneering role regarding the form, presentation and amount of detailed information included in their annual reports (Edwards, 1989: 127). Edwards concluded that criticisms aroused by the Royal Mail case of 1931 had a greater impact than all previous legislation on the quality of published data and that 'the published range of financial reports often exceeded legal requirements' (Edwards, 1989: 127–9). Nonetheless, many commentators were concerned by the status quo during the 1930s. The *Economist* was consistently critical and even within the accountancy profession there were doubts; the President of the Council of the London Association of Accountants, for example, thought in 1934 that 'the events of the past few years have proved the weakness of relying on voluntary effort' (Stacey, 1954: 186).

It is, of course, difficult to measure the extent of discretionary disclosure in a consistent way over any long period of time because of the changes brought about by new legislation and since the individual accounting items concerned may not be equally useful to their audience. This paper measures (in 1920 and 1935) the voluntary disclosure of a small number of items that were significant enough to be included in the next Companies Acts (i.e. 1928–9 and 1947–8 respectively) as follows:

1920

- i) the inclusion of profit and loss accounts;
- ii) the differentiation of fixed from floating assets.

1935

- i) the consolidation in some way of subsidiary company results;
- ii) the presentation of comparative figures;
- iii) the identification of the depreciation charge for the year;
- iv) the inclusion of fixed assets on the balance sheet on a cost less aggregate depreciation basis.

The analysis concentrates on 1920 and 1935 because the volume of new disclosures required by the 1948 Companies Act severely limited the scope for managerial discretion in 1950.⁴

The extent of the variations between companies

Edwards found that there were wide variations in practice between companies before 1940 (Edwards, 1981: 54; 1989: 142) and the sample

data sets enable a comparison to be made between the degrees of variation in disclosure levels and practices in 1920, 1935 and 1950.

More specific areas:

The forms of accounting for investments in other companies

Few companies in the UK (in contrast to their counterparts in the US) used group accounting procedures in the 1920s (Edwards, 1981: 28; see also Edwards, 1989: 228, Nobes and Parker, 1979: 199). Bircher found that there was only limited use of consolidated accounting techniques even in the first half of the 1940s, which is consistent with the views of Kitchen and Parker (1980: 109) and Zeff (1971: 16), but counter to those of Walker (1978: 94), Edwards (1981: 30) and Edwards and Webb (1984: 48), each of whom believed the Royal Mail case to have stimulated the voluntary publication of consolidated accounting information (see also Kitchen, 1979). More precisely, Bircher had suggested, based upon a sample of the largest holding companies by market capitalisation for 1938–9, that 22.5% was an upper bound for the presentation of some form of consolidated reporting (and 12.5% for the presentation of both a consolidated profit and loss and balance sheet; Bircher, 1988b: 5). Analysis of the financial statements of a broadly based set of public companies for 1935 should provide further evidence on this area of disagreement in the literature.

Omnibus headings for large groups of assets

As noted above, the 1928–9 Acts required companies to distinguish their fixed assets from their floating assets (although without necessarily using those or indeed any headings), a provision, as noted above, seemingly aimed at ending the practice of single omnibus headings for most or all assets. Previously, according to Marriner, it was 'quite usual to find a single valuation given to a group of items such as 'land, water rights, reservoirs, effluent works, buildings, plant, machinery, horses, wagons, office furniture and goodwill' or 'beer and casks, malt, hops, horses, forage, coals, buildings and sundries' (Marriner, 1980: 216) although Arnold has suggested that few major companies were actually using the device after the First World War (Arnold, 1997: 161). An examination of the data set for 1920 should, therefore, provide additional evidence on this contested issue.

Accounting for fixed assets (and the related problem of depreciation)

The treatment of fixed assets and the related depreciation problem has been an area of difficulty and controversy in financial reporting for more than a century, largely because 'the debate about depreciation was really a debate about the nature of accrual accounting' (Brief, 1993: xviii). As far as the second quarter of the twentieth century is

⁴ In that year, only two companies in the sample anticipated the requirements of the 1967 Act by disclosing their turnover and giving details of the amounts paid to their highest paid director and employees (see Table 3, lines 1, 24–5).

concerned, Edwards has drawn the important conclusions that 'the systematic depreciation of fixed assets did not become a widespread practice until after 1940', that the total omission of a depreciation charge was not uncommon and that, when deductions were made, they were often lump sum *appropriations* of profit rather than more specifically calculated charges against those profits (Edwards, 1989: 132). These conclusions appear to have been greatly influenced by the practices of companies in the iron and steel industry, however, and the data for 1920 and 1935 should enable the applicability of these observations to other commercial companies to be properly assessed.

Secret reserve accounting

Secret reserve accounting and profit smoothing were common practices in the years following the First World War. The finance director of Boots, for example, later said that the business was 'stuffed full' of reserves unknown to the shareholders (Chapman, 1974: 135–6) and P & O (Napier 1991), Imperial Tobacco, J. Lyons, G.K.N. and John Summers among others carried secret reserves in the 1920s (Edwards, 1989: 138–40). More generally, based on a study of the archival records of 30 major UK quoted companies, Arnold found that about a third did not appear to have used secret reserves, even during the First World War and its immediate aftermath, but that perhaps a quarter used them to an important extent (Arnold, 1997: 146–7, 162; see also Arnold, 1996: 45–9). Indeed, at this time, the ICAEW were not entirely opposed to either secrecy in general, which some saw as a 'necessary adjunct of commercial success' (see Edwards, 1979: 290), or to secret reserves in particular, which they thought 'in certain cases desirable and in many cases essential' (Kitchen, 1979: 112–3).

When companies established and used secret reserves, the published statements obviously did not show the size of these reserves, but at least some auditors made sure (if only for their own legal protection) that their *existence* was hinted at. Ambivalent captions, such as 'creditors and sundry balances', were used on published balance sheets, while annual profits were described as the 'balance for the year' or in some other way that would signal that they had been enhanced by transfers from secret reserves. The present study examines the patterns of change in the captions used for reserves and profits in the published statements in 1920 and 1935, before secret reserves were generally outlawed in the legislation of the late 1940s.

The treatment of taxation

Taxation charges and liabilities were one of the most poorly disclosed items during the first quarter of the 20th century, perhaps because of political sensitivities concerning war-time profit

levels (Arnold, 1997: 162). A comparison of the data on taxation disclosure for 1920 and 1935 will indicate whether disclosures of taxation charges and liabilities improved after the First World War and thus place the existing conclusion in a broader context.

4. Characteristics of the data set

As explained above, the purpose of this study is to examine corporate disclosures in the UK in the benchmark years 1920, 1935 and 1950 so as to provide an overview and analysis of the characteristics of, and the patterns of changes in, corporate financial disclosures across the important period 1920–50, with particular reference to the disclosure issues identified in the preceding section.

The intention was to select a data set that would be broadly representative of the British economy of the time, within the constraints imposed by the considerable difficulties of accessing historical data. These constraints were relaxed somewhat by the generosity of the Leverhulme Foundation in providing financial support for this work and for the necessary searches in the collections of the Guildhall Library, Companies House, local record offices and archives and the companies themselves.

A sample of 50 companies was seen as providing a proper basis for analysis, concentrating on the largest quoted companies, because of their greater economic significance. The definition of the largest companies was based on Chandler's list of the 200 largest industrial enterprises by market value for 1919, 1930 and 1948 (1990: Appendices B1–B3) and Wardley's 50 largest companies by market value, using somewhat different criteria, for 1904–5 and 1934–5 (1991: 278–81).

The study also seeks to draw general conclusions about disclosure practices and has accordingly been confined to companies that were subject to the general regulatory requirements of the time, i.e. those within the Commercial and Industrial (25 companies), Breweries (10), Coal, Iron and Steel (9), Mines (2), Oil (2) and Shipping (2) sections in the *Stock Exchange Official Yearbook*. The Commercial and Industrial set was very broadly defined in the period 1920–50 and the sample for this section consists of one or two firms in each of some twenty industrial sectors (see Appendix 1 for details).

The intention was to hold the composition of the sample as constant as possible, despite the considerable organisational change that took place within the period. Therefore, the sample consists of the 50 largest companies in continuous existence from 1920–50, that were subject to the general regulatory provisions of company law and for which the published annual reports could be traced.

5. Findings

The analysis is concerned with both the quantitative and qualitative aspects of disclosure practices across the period 1920–50, based upon the defined sample set and with a particular focus upon the most important disclosure issues according to the relevant literature. The more readily quantifiable aspects have been set out in Tables 1 to 3, which provide, respectively, a summary of the annual reports, and composite average balance sheets and profit and loss accounts for the 50 companies, in 1920, 1935 and 1950. The main findings are then summarised in Table 4. As can be seen, these Tables collectively provide an overview of the general orders of magnitude involved and highlight several of the more fundamental changes in disclosure practice, by way of context for the disclosure issues examined below.

The overall orders of magnitude in Tables 2 and 3 are influenced by the substantial (but opposite)

changes in price levels between 1920 and 1935 and then from 1935 to 1950. In 1920, the British economy was in the middle of a sharp but short-lived post-war boom and the GDP price index (see Table 1, line 19) stood at 270.8. In 1935 the economy and its general price levels were depressed (index level 162.5) but by 1950 business sectors were well into a sustained post-war boom, and price levels were accordingly higher (GDP index 325.7). Thus the expansion in total assets from 1920 to 1935 of nearly a third (31.3%) was despite a general price level decline of 40 per cent whereas, in 1950, although the price index had doubled since 1935 (see Table 1, line 19), total assets were now three times (fixed assets 3.93 times and stock levels 8.57 times, Table 2, lines 2, 4) as high. In 1920 and 1935, the proportion of total assets funded by equity shares and by various forms of debt (preference shares, debentures and bank and other borrowings) was high (62.9 and then 70.4%)

Table 1
Summary of annual reports for the sample of 50 companies, 1920–50

	1920			1935			1950		
	<i>n</i>	<i>mean</i>	<i>std</i>	<i>n</i>	<i>mean</i>	<i>std</i>	<i>n</i>	<i>mean</i>	<i>std</i>
1. No of report pages	50	4.24	1.36	50	7.06	5.22	50	15.16	6.81
2. Using colour	0			0			3		
3. Using illustrations	0			0			5		
4. Using graphs	0			0			1		
5. Using photographs	0			0			4		
6. Using vertical presentation	0			0			5		
7. Showing comparative figures	1			20			50		
8. Number of notes to accounts	16	1.06		31	1.74		50	8.64	4.97
<i>Items disclosed in profit and loss account:</i>									
9. income	29	4.34	2.13	49	3.50	2.05	50	7.74	3.05
10. expenditure	29	7.31	4.14	49	6.71	3.60	50	15.87	4.48
11. total	29	11.66	5.42	49	10.21	4.87	50	22.88	4.98
<i>Items disclosed in balance sheet:</i>									
12. assets	50	8.90	3.86	50	12.08	3.82	50	13.92	4.21
13. liabilities	50	15.64	5.81	50	16.44	4.60	50	20.38	4.59
14. total	50	24.54	6.89	50	28.52	6.63	50	34.30	6.87
15. Total of Profit and Loss and Balance Sheet		36.20			38.73			57.18	
16. Number of subsidiaries: ave		4.40			9.84			22.54	
17. highest		62			73			300	
18. Presenting consolidated accounts	0			7			50		
19. Price index, GDP at factor cost (1913=100)		270.80			162.50			325.70	

Sources:

GDP data: Feinstein, 1972 T132-3

Other data: sample set of companies as listed in Appendix 1

but by 1950 the proportion of the (increased) asset base funded by these long-term capital sources had fallen considerably in relative terms (to 34.7% of total assets; see Table 2). At this later date, reserves other than retained profits (6.48 times as large in monetary terms in 1950 as in 1935) and trade credit (4.92 times as large) had risen disproportionately and taxation had become a significant, overt, corporate liability for the first time (see Table 2, lines 8–21).

Operating profits were, in monetary terms, five times as high in 1950 as in 1935 and returns on capital employed had seemingly doubled (although dividend payments were still controlled), but these changes (and some of those on the balance sheet, referred to above) were in large part a 'money illusion' consequent upon the retention of historical cost accounting during a period of rapid war-time inflation (see Table 3) and thus hid the existence of a number of very real measurement problems.

Overall trends in disclosure levels and quality

The size of the annual reports in terms of page length almost quadrupled (3.57 times) over the 30 years from 1920 to 1950, the larger part of the relative growth coming after 1935 (2.15 as against 1.66 times; Table 1, line 1). By 1950, however, no more than 10% of even the largest companies were using colour, illustrations, graphs or photographs to make the reports more user friendly (although none had done so in 1920 or 1935; Table 1, lines 2–5).

The physically larger annual reports in 1935 disclosed, on average, only slightly more items (7% higher) in their profit and loss accounts and balance sheets, than in 1920 (Table 1 line 15). The disclosure level for assets did, however, increase considerably (on average, 12 asset categories were disclosed in 1935 as against nine in 1920 (Table 1 lines 12, 15)).

By contrast, the doubling of the physical size of the annual report between 1935 and 1950 was accompanied by a transformation in the number of items disclosed in the profit and loss account, from an average of 10 items in 1935 to 23 in 1950; income categories doubled and expenditure item disclosures rose from less than seven to nearly 16 (see Table 1, lines 9–15). All companies were now required to disclose directors' remuneration, annual depreciation provisions and tax charges (see Table 3). Balance sheet disclosures rose by a more moderate 20% across the same period and the average number of notes to the accounts grew from less than two in 1935 to nearly nine in 1950 (Table 1, line 8).⁵

The importance of discretionary supplementation of the statutory requirements

In the areas specified above for potential voluntary reporting in 1920, 29 of the 50 companies pre-

sented a separate profit and loss account (the remainder showing brief details of the movement in retained profits in an inset section on the balance sheet) while 49 companies differentiated fixed from floating assets. The accounting practices of the remaining company (which did not make this distinction), P & O, across the inter-war period, have been carefully analysed in the accounting history literature (see Napier, 1991) but may have been atypical in its approach to disclosure policy. The overwhelming number of companies did distinguish their fixed from their floating assets and suggests, contrary to Marriner (1980: 216), that any problems in this regard may have been largely confined to smaller companies or to earlier periods of time.

In the areas examined for evidence of discretionary disclosure in 1935, only seven of the 50 companies provided additional statements that showed the combined assets and liabilities of the group as a whole (i.e. including subsidiary companies), five of whom also provided a consolidated profit and loss account,⁶ a level of consolidation somewhat below Bircher's (slightly later) findings (1988b: 5). Twenty companies in 1935 showed comparative figures from the previous year in their accounts, as against only one company in 1920 (Table 1, line 7). Twenty-nine companies disclosed their annual depreciation provisions, as against 26 in 1920 (with only three, as against eight in 1920, of those companies apparently setting their charge at zero: Table 3, lines 5–7). On the related issue of the inclusion of fixed assets on the balance sheet on a cost less aggregate depreciation basis, practices were more varied; 24 of the 44 companies concerned gave only the net book value for fixed assets (although nearly all did describe it as being 'cost less realisations less amounts written off'),⁷ a further eight gave the net book value as at the start of the year and then showed the deduction of the current year's depreciation charge. Only 12 companies (27%) gave details of both the cost of the fixed assets concerned and of the accumulated depreciation provisions⁸ and in every case, the in-

⁵ The most common reporting year-ends were December and then March. Reporting year-end dates remained fairly stable over the period 1920–50.

⁶ A further two companies provided the accounts of their main subsidiary as an addition to their own published accounts.

⁷ Six companies could be effectively removed from any expectation of depreciating their assets as holding companies (with an asset base of securities rather than operational assets) or because of the workings of a recent capital reduction scheme.

⁸ Two of these companies showed accumulated depreciation as a reserve on the 'liabilities' side of the balance sheet, one substituted a valuation in 1928 for cost, one also provided a ten-year summary of fixed asset movements and another (P & O) explained how the total provision for fleet assets compared with a rate of 5% since acquisition.

formation provided effectively applied to the operational fixed assets as a whole.

The extent of the variations between companies

The relationship in Table 1 between the relative means and standard deviations in 1920, 1935 and 1950 provides some indication of the variations between companies in terms of their overall disclosure levels. The page length of the annual report was far more variable, in these terms, in 1935 than in either 1920 or 1950. The disclosure of items in the profit and loss was slightly more variable in 1935 than 1920 (particularly on the detailing of expenditures), and both were more than twice as variable in this regard as 1950. However, variations in the numbers of balance sheet items disclosed, both assets and liabilities, were greater in 1920 than in 1935, although the differences between all three years were far less marked than in the case of profit and loss account items.

More specific areas

The forms of accounting for investments in other companies

During the period 1920 to 1950 the corporate economy emerged, characterised by high numbers of mergers and company acquisitions (see Hannah

1976). As far as our sample of companies is concerned, the average number of subsidiary companies rose from 4.40 in 1920 to 9.84 in 1935 and 22.54 in 1950. The company reports reveal that the highest number of subsidiaries owned by any one company in the sample set rose from 62 in 1920 to 73 in 1935 (the Calico Printers Association on both occasions) and then to 300 in 1950 (Lever Brothers; see Table 1, lines 16–17).

With regard to consolidation, no companies in the sample used group accounting procedures in 1920 and, as indicated above, in 1935 only nine of the 50 companies provided information on the accounting results or position of either their main subsidiary company or for the group as a whole, in each case as a supplement to their own accounting statements.

Again in 1935, as far as the (unconsolidated) balance sheets were concerned, the valuation basis for the investment in subsidiary companies (not reported in the tables) was shown by 41 companies and not revealed by six;⁹ most companies (32) showed the investment as being 'below cost' (four of whom quantified the deduction from cost), six showed it at cost, one at par value, one at 'less than market value' and one at a nominal £5. In profit

Table 2
Composite balance sheets for the sample of 50 companies (£000), 1920–50

	1920		1935		1950	
	<i>n</i>	<i>mean</i>	<i>n</i>	<i>mean</i>	<i>n</i>	<i>mean</i>
1. Fixed assets	48	3866	46	4663	50	18343
2. Goodwill: nominal amount	1		1		4	
3. cost or value	7	1412	9	1842	14	2779
4. Stock and work in progress	46	2361	43	1638	49	14041
5. Cash	47	443	50	649	49	3326
6. Other assets		4586		7845		12964
7.		12668		16637		51453
8. Equity shares		4024		6087		8549
9. Retained profits		666		797		1271
10. Other reserves		1481		2632		17068
11. Minority holdings		0		0		1762
12. Equity interests		6171		9516		28650
13. Preference shares		2765		3385		4640
14. Debentures		936		1587		3099
15. Bank and other borrowings		239		651		1587
16. Capital employed		10111		15139		37976
17. Interest and dividends due		269		166		713
18. Trade creditors		2272		1320		6507
19. Taxation		15		11		4160
20. Other provisions		0		1		2097
21.	50	12667	50	16637	50	51453

Sources:

Sample set of companies as listed in Appendix 1

Table 3
Items from composite profit and loss accounts for the sample of 50 companies (£000), 1920–50

	1920		1935		1950	
	<i>n</i>	<i>mean</i>	<i>n</i>	<i>mean</i>	<i>n</i>	<i>mean</i>
1. Turnover	0		0		2	
2. Operating profit and investment income	49	1459	50	1462	50	7392
3. Directors' remuneration	6	7	41	12	49	80
4. Audit fees	4	1	5	1	28	12
<i>Depreciation of fixed assets:</i>						
5. amount quantified	18	131	26	202	49	1210
6. apparent zero charge	8		3		0	
7. charge not disclosed	24		21		1	
8. Maintenance of fixed assets	4	125	4	192	3	318
9. Trading profit	50	879	50	1268	50	5985
<i>Interest on borrowings:</i>						
10. amount quantified	25	45	34	90	35	156
11. apparent zero charge	14		8		8	
12. charge not disclosed	11		8		7	
13. Taxation	8	28	8	413	50	3025
14. Profit after tax	50	799	50	1126	50	2861
15. Preference dividends		161		215		187
16. Ordinary dividends		524		726		788
17. Retained profits of year		114		185		1886
<i>Other information:</i>						
18. Return on capital employed		8.06%		8.06%		16.85%
19. Rate of preference dividends		5.18%		5.57%		3.28%
20. Rate of ordinary dividends		11.55%		10.78%		9.54%
<i>Directors' remuneration:</i>						
21. minimum		2		1		3
22. maximum		12		200		353
23. Chairman's remuneration	0		0		0	
24. Highest paid director	0		0		2	
25. Disclosure of employees pay	0		0		2	

Sources:

Sample set of companies as listed in Appendix 1

and loss accounts, it was almost universal practice to show the inclusion of the profits of subsidiaries to the extent that dividends had been either received or were receivable by the holding company, although two companies adopted a slightly more inclusive policy.¹⁰

Omnibus headings for large groups of assets

As stated above, only one of the sample companies in 1920 used an asset heading so broad as to not differentiate its fixed from its floating assets, with an average disclosure level for assets of 8.9 items (with some degree of variation around that mean; Table 1, line 12). The number of operating fixed asset categories (excluding investments) averaged

only 2.06, however, with many companies (21) showing operating fixed assets as a single category.¹¹ By 1935, the use of omnibus headings in their

⁹ The other three either did not appear to have investments in other companies or provided only limited information because those subsidiaries were not trading. One company indicated that amounts due from subsidiaries were shown after deduction of a 'reserve' or provision.

¹⁰ One company included the full profits of subsidiaries and another included the profits of wholly owned subsidiaries and the dividends receivable from other subsidiary companies.

¹¹ At the other extreme, four companies divided their operating fixed assets into five (Burmah Oil), six (General Electric and Whitbread) or seven (Rio Tinto) categories.

extreme form had disappeared since, as noted earlier, the 1928–9 Act required companies to distinguish their fixed assets from their floating assets.

Accounting for fixed assets (and the related problem of depreciation)

In 1920, 18 of the sample companies stated their depreciation charge (Table 3, line 5). Of these, seven charged what might be seen as 'round sums', but in only one case was this clearly treated as an appropriation.¹² The post-war aftermath was very difficult in a number of trades¹³ and two companies divided their charge between 'normal' and (substantial amounts of) 'special' depreciation while eight companies appeared to charge no depreciation.¹⁴ The remainder described their profits as being 'after depreciation', or indicated that 'ample depreciation had been made'.

In 1935, 26 out of the 50 companies quantified the depreciation charges in their profit and loss account¹⁵ and two gave this information on the section of the balance sheet relating to fixed assets. Of these, seven charged round sum amounts but only two treated depreciation as an appropriation of profits. Three of the companies appeared not to have charged depreciation in the year concerned. The remaining companies described their profits as being 'after depreciation', or indicated that 'adequate' depreciation had been charged but without quantifying the amounts involved.

Secret reserve accounting

While the *establishment* of secret reserves could be defended as a form of prudence which caused little harm to corporate financial stakeholders (and also prevented organised labour learning of real profit levels) the *use* of secret reserves to provide covert subsidies to profit levels was far more vulnerable to legal challenge, as the Royal Mail case made clear in 1931. There were two main ways of creating secret reserves; first the deliberate over-depreciation of fixed assets (which was never clearly apparent even in the company's own books) and, second, the setting up of reserve accounts in the company's internal books which were then included covertly as creditors on the published balance sheet. In the case of the latter, auditors were under some pressure to insist upon the use of captions such as 'creditors and sundry balances', to provide the basis for arguing in any subsequent legal actions that other items were included in creditors and that the existence of the secret reserves was thereby indicated. Similarly, in years in which profits had received a covert subsidy from secret reserves, auditors could insist that the year's profit be described as a 'balance' for the year, as a coded reference to what had taken place.

In 1920, the situation concerning secret reserves was quite complicated. Many companies had earned higher profits than usual during the war

years (although the severe slump of 1920–21 and the deflation that followed it would remove much of the excess; see Arnold 1999) and the political sensitivity of excess war profits gave their own impetus to the use of secret reserves. On the other hand, the potential liability of many companies to taxes based on the excess profits of the war years was still unresolved in 1920 and normal accounting prudence alone would lead to the inclusion of unusually large tax provisions under creditors on the balance sheet. Moreover, in 1920, the term 'reserve' was used variously for profit appropriations (i.e. actual reserves), provisions for taxation and other provisions that were needed before the profit figure could be determined. Although the (important) distinction between reserves and provisions was not clarified by the ICAEW until 1943, the use of the term provision was far more widespread in 1935 than in 1920.

In 1920, 19 of the 50 companies used descriptions such as 'creditors' or 'sundry creditors', that do not give any real suggestion that unusual items might have been included in creditors.¹⁶ A further 15 used descriptions¹⁷ that indicate the inclusion of substantial tax or other provisions in creditors (and just possibly the inclusion of secret reserves), while the remaining 16 companies used terms that were certainly wide enough to cover the possible inclusion of secret reserves.¹⁸ The proportion of companies in these three categories is broadly consistent with Arnold's earlier findings on the incidence of secret reserve accounting in the aftermath of the First World War (Arnold, 1996: 45–9 and 1997: 146–7, 162).

Fifteen years later, in 1935, the way of describing 'creditors' on the balance sheet had changed; 14 sample companies used a simple, unequivocal description, the majority (29) used descriptions

¹² Several used the description 'reserve' but this seemed to be merely part of a general looseness in terminology as applied to reserves and provisions.

¹³ One company, Dunlop, which had bought forward on a large scale in anticipation of expansion was badly caught out by the severe slump in trade in 1920 and the consequent fall in the market values of commodities such as rubber and cotton. The result was a loss equivalent to 30% of total assets.

¹⁴ The auditor to one of these companies qualified his report because of the lack of any depreciation charge.

¹⁵ One company, Burmah Oil, allocated the year's depreciation charge across four asset categories.

¹⁶ The use of 'sundry' as a prefix to 'creditors' was generally used to indicate the inclusion of a wider group of creditors than merely 'trade' creditors and would undoubtedly have covered the inclusion of provisions. It would, however, almost certainly, have represented insufficient indication of the possible inclusion of reserves.

¹⁷ Thirteen referred to creditors and either provisions or reserves, in most cases for taxation, and two referred to 'creditors and credit balances including reserves for contingencies'.

¹⁸ Fifteen used the description 'creditors and credit balances' and one referred to 'creditors and other liabilities and balances'.

Table 4			
Measures of financial disclosure for the sample of 50 companies, 1920–50			
	1920	1935	1950
1. Mean number of pages in company reports	4.2	7.1	15.2
2. Mean number of items in company accounts	36.2	38.7	57.2
3. Mean number of items in profit and loss account	11.7	10.2	22.9
4. Mean number of items in balance sheet	24.5	28.5	34.3
5. Mean number of notes to the accounts	1.1	1.7	8.6
6. Percentage with separate profit and loss account	58	98	100
7. Percentage with notes to their accounts	32	62	100
8. Percentage with (some) consolidated accounts	0	14	100
9. Percentage disclosing depreciation charge	52	58	98
10. Percentage showing comparative figures	2	40	100
11. Percentage declaring directors' remuneration	12	82	98
12. Percentage declaring audit fees	8	10	56
13. Percentage declaring tax provision	16	16	100

that indicated the inclusion of provisions (which in 14 cases could perhaps have been reserves)¹⁹ and seven other companies used other descriptors broad enough to have covered the inclusion of secret reserves.²⁰

In 1920, 31 companies in the sample used straight-forward descriptions of profit or loss for the year,²¹ two used slightly obscure descriptions,²² seven referred to 'profit' but after the inclusion of adjustments (by implication credits) of tax liabilities²³ and the other referred merely to the 'balance' of the profit and loss account.²⁴ By 1935, the overall position had changed; 44 companies used straight-forward descriptions, as above, one used an obscure description, two referred to profits after provisions for contingencies and only three used the description 'balance for the year'.²⁵ The evidence is only indirect but it seems likely that the Royal Mail case could have encouraged a qualitative improvement in disclosures by prompting a more careful description of creditors, provisions and reserves in the published balance sheets of major UK companies.

The treatment of taxation

The disclosure level for taxation was generally low, prior to 1950. Only eight companies in the sample for 1920 quantified their taxation charge (Table 3, line 13; Table 4 line 13). Twenty-three mentioned that the profits were after the appropriate charges for taxation, six explained that the profits were after the adjustment (by implication had been enhanced) of the Excess Profits Duty liability, one disclosed the total paid in war-related profits taxes (but did not disclose the current year's charge) and the other 12 did not mention taxation. By 1935, the number quantifying their tax charge was unchanged (although one company did also provide a 10-year summary that included the annual tax charges), 22 mentioned that profits were after taxation and the remainder hardly men-

tioned taxes at all.

6. Discussion and conclusions

The intention of this paper has been to provide a structured discussion on the levels of, and patterns of change in, corporate disclosures in the UK across broadly the second quarter of the twentieth century, based upon the analysis of a substantial body of financial reporting data for the years 1920, 1935 and 1950. The more quantifiable aspects of the disclosure issues concerned are set out in Tables 1–3 and summarised in Table 4.

Actual levels of disclosure reflect both legislative requirements and their supplementation at the discretion of management. Until the late 1940s, the legislature required only modest levels of corporate disclosure although Edwards has argued that the Royal Mail case of 1931 had a considerable impact on accounting disclosures in this period.

Accordingly, the annual reports for 1935 in particular were examined for evidence on the extent to which they voluntarily anticipated the major additional requirements of the 1948 Companies Act. Only a small proportion of the companies provided additional statements on group assets or profits, rather less than Bircher had found for the slightly

¹⁹ Either for taxation (in 15 cases) or against (unspecified) contingencies (14 cases).

²⁰ Creditors and credit balances or creditors and other accounts.

²¹ 'Profit or loss' (in 20 cases) or profit after estimation of the tax liability and/or the depreciation provision (11 cases).

²² Accounts for the year after allowing for depreciation, net result after providing for depreciation.

²³ The amount was quantified in only one case.

²⁴ In two cases, after provisions for tax or depreciation and in one case after making provision for an (unspecified) contingency.

²⁵ In one case the balance was after setting funds to a contingency reserve and in another it was after the inclusion of a transfer from reserves.

later year, 1938–9. Twenty companies showed comparative figures in their accounts (as against only one in 1920), although the number of companies disclosing their annual depreciation provisions had improved only slightly on the position in 1920. Further, on the related treatment of fixed assets on the balance sheet, only a quarter of the companies in 1935 gave details of the cost of their fixed assets and of the accumulated depreciation provisions and, in each case, the information was given only for operating fixed assets as a whole. The terminology used to describe creditors on the balance sheet, which could have masked the inclusion of secret reserve accounts certainly changed from 1920 to 1935. This, in conjunction with less ambiguous descriptions of the profit or loss for the year in 1935 than in 1920 (with fewer companies using the description ‘balance for the year’) suggests that the Royal Mail case may have encouraged a qualitative improvement in disclosures by

way of a more careful description of provisions, reserves and creditors in company balance sheets than obtained in 1920.

The various findings indicate the substantial increase in disclosure levels that took place between 1920 and 1950 and suggest that most of this took place in the second half of the period. Discretionary additions to disclosure levels consequent upon the negative publicity of the Royal Mail case in 1931 appear to have been only modest in their impact, and may well have been confined to a small number of progressive firms. At a broader level, the various findings are consistent with a view (see Maltby, 2000) that the real agency for change in this period was less a change of position towards corporate disclosures on the part of the business community of the 1930s than the effect of the Cohen Committee Report of 1945, as influenced by the views of the ICAEW, on the company legislation that followed in 1947–8.

Appendix 1: sample set of companies

<i>Company name</i>	<i>Reg.</i>	<i>SE section</i>	<i>Ind. sector</i>
01 Amalgamated Press	1896	Com & ind	Newspapers
02 Ansells Brewery	1901	Breweries	Brewing
03 Associated Newspapers	1905	Com & ind	Newspapers
04 Associated Portland Cement	1900	Com & ind	Cement
05 Austin Motors	1914	Com & ind	Motor cars
06 Babcock and Wilcox	1900	Iron and coal	Engineering
07 Barclay Perkins	1896	Breweries	Brewing
08 Bass Ratcliffe & Gretton	1888	Breweries	Brewing
09 Birmingham Small Arms	1896	Com & ind	Guns, motor cycles
10 Boot's Pure Drug	1888	Com & ind	Chemists
11 British Aluminium	1910	Com & ind	Aluminium refiners
12 British Insulated Callender's & Cables (prev British Insulated & Helsby Cables)	1897	Com & ind	Cables, construction
13 Burmah Oil	1902	Oil	Oil
14 Calico Printers' Association	1899	Com & ind	Textiles
15 Cammell Laird	1864	Iron and coal	Shipbuilding
16 Charrington	1897	Breweries	Brewing
17 Coates [J&P]	1884	Com & ind	Thread
18 Consolidated Gold Fields	1892	Mines	Gold mining
19 Courage	1888	Breweries	Brewing
20 Courtaulds	1913	Com & ind	Textiles
21 Cunard Steamship	1878	Shipping	Shipping
22 Distillers	1877	Breweries	Distilling
23 Dorman, Long	1889	Iron and coal	Steel
24 Dunlop Rubber	1896	Com & ind	Rubber
25 English Electric	1918	Com & ind	Electrical engineering
26 Fine Spinners and Doublers	1898	Com & ind	Textiles
27 General Electric Co	1903	Com & ind	Electrical engineering
28 Guest, Keen and Nettlefold	1900	Iron and coal	Steel
29 Guinness [Arthur]	1886	Breweries	Brewing
30 Imperial Chemical Industries (prev. Brunner Mond & Co.)	1881	Com & ind	Chemicals
31 Imperial Tobacco	1901	Com & ind	Tobacco
32 Lever Brothers & Unilever Ltd	1894	Com & ind	Conglomerate
33 Lucas [J]	1897	Com & ind	Engineering

Appendix 1: sample set of companies (*continued*)

34	Lyons [J]	1894	Com & ind	Refreshments
35	Mitchell & Butlers	1888	Breweries	Brewing
36	P & O Steam Navigation	1840	Shipping	Shipping
37	Rio Tinto	1873	Mines	Mining
38	Rolls-Royce	1906	Com & ind	Engines, motor cars
39	Shell Transport and Trading	1897	Oil	Oil
40	Stavely Coal and Iron	1863	Iron and coal	Steel
41	Stewarts and Lloyds	1890	Iron and coal	Steel
42	Swan Hunter and Wigham-Richardson	1903	Iron and coal	Shipbuilding
43	Thomas [Richard] and Baldwins	1884	Iron and coal	Steel
44	Tube Investments	1919	Com & ind	Steel tubes
45	Union International (Cold Storage)	1897	Com & ind	Cold storage plants
46	Vickers	1867	Iron and coal	Arms, engineering
47	Wall Paper Manufacturers	1899	Com & ind	Wallpaper
48	Watney Coombe Reid	1898	Breweries	Brewing
49	Whitbread	1889	Breweries	Brewing
50	Wiggins Teape	1919	Com & ind	Paper

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Accounting working for the state: tax assessment and collection during the New Kingdom, ancient Egypt*

Mahmoud Ezzamel*

Abstract—This paper examines the relationship between accounting and taxation in antiquity. It draws upon complete translations of original documents from the New Kingdom (1552–1080 BC), ancient Egypt, to examine the accounting practices used in the various stages of the ‘cycle of taxation’, beginning with identifying taxable subjects, through the estimation and final assessment of taxes, to the collection, transportation and storage of taxes. The paper argues that these accounting practices were sufficiently fine-tuned for an ancient system of human accountability to function. Accounting practices used in these ancient documents embodied several key characteristics: designation of precise time and space, the identification of individuals responsible, and the naming, itemisation, enumeration, valuation and attribution of responsibility for different objects. Extrinsic relative valuations of different objects collected as tax in kind could be derived because the ancient scribes used a money of account system that allowed inter-translatability across different monies. This evidence points to the centrality of the role of accounting in the economy of ancient Egypt.

1. Introduction

‘The offspring of a child of Egypt, The overseer of grains who controls the measure, Who sets the harvest-dues for his lord, who registers the islands of new land, In the great name of his majesty, Who records the markers on the borders of fields, Who acts for the king in his listing of taxes, Who makes the land register of Egypt; the scribe who determines the offerings for all the gods. Who gives land-leases to the people, The observer of grains [provider of] foods, Who supplies the granary with grains’ (The instructions of Amenemope; Lichtheim, 1976: 148–149).

Throughout ancient Egyptian history, the levying and collection of dues, or taxation, from various institutions and subjects has been one of the main concerns of state administrators and scribes. The earliest example of accounting, and indeed writing, which dates back to Dynasty Zero (about 3,300 BC),¹ was in the form of tax lists on linen (Davies and Friedman, 1998). There is reference during the Old Kingdom to tax collection on the Palermo Stone (Clagett, 1992) and to dues collected from various individuals and institutions for the temple of Néferirakarê-Kakai (Posener-Kriéger,

1976). There is also evidence on the various steps involved in the estimation of taxes before cultivation dating to the Middle Kingdom (Smither, 1941). This represents one of the earliest stages of what I will call the ‘cycle of taxation’, which involves the definition of taxable entities, the estimation, final assessment, collection, transportation and storage of taxes. These early records have yielded important insights into the relationship between the state and its taxable subjects and the role of accounting in this context. However, because of the fragmentary nature of this early evidence, only a very basic picture of accounting for taxation in ancient Egypt can be gleaned. In general, we know very little about taxation practices used in the ancient world. For example, which entities were deemed by the state administration to be taxable subjects? What steps and procedures were used to levy and collect taxes? Which accounting practices were used in the assessment and collection of taxes, and in underpinning the different methods of monitoring the transportation of taxes and their delivery to state granaries and storehouses? To what extent did the accounting practices of the time provide the basis for an accountability system that enabled the monitoring and control of the delivery and storage of taxes?

*The author is professor at the University of Cardiff. He is grateful for the constructive comments on earlier drafts of this paper by Margaret Lamb, Ken Peasnell, Stephen Quirke and two anonymous reviewers, and also acknowledges the help of Sian Davies in collecting some of the source material used in the paper. Correspondence should be addressed to Professor Ezzamel at Cardiff Business School, Cardiff University, Aberconway Building, Colum Drive, Cardiff CF10 3EU, Wales, UK. E-mail: ezzamel@cardiff.ac.uk

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¹ Broadly speaking, ancient Egyptian history is divided into pre-dynastic and dynastic eras. The Dynastic era is further divided into the Early Dynastic Period (3,300–2700 BC), the Old Kingdom (2700–2200 BC), the Middle Kingdom (2050–1780 BC), the New Kingdom (1552–1080 BC), and the Late Dynastic Period (1080–332 BC). The latter four periods were interspersed with Intermediate Periods, each lasting a considerable number of years.

Addressing these issues can help clarify the nature and range of roles played by accounting practices not only in ancient economies but more generally, and enhance our appreciation of the context-dependent functioning of accounting. As the literature shows (e.g. Dowell, 1965; Webber and Wildavsky, 1986; Brewer, 1989), taxation has been a major pillar upon which depended the state economy from ancient to present times, and serious efforts have been taken to bring tax assessment and collection under state control.² For example, before the mid-17th century, European states relied on financial middlemen and private consortia of tax farmers, agents and employees of private financiers to raise loans and collect taxes. Gradually, from that date onwards state administrators began to supplant tax farming and to dominate the fiscal tax activities. In England, 'a growing number of office-holders, organized on departmental lines and run by committees, came to dominate the fiscal and administrative operations of government' (Brewer, 1989: 64). The desire to tighten control over tax collection was driven in the main by the need to cover the escalating costs of war. Once tax farming to private consortia came to an end in England in 1683, state tax administration began to develop quickly, and from then onwards the Treasury began to control income as well as expenditures. The, by now, large and more complex tax administration introduced regular circuits of inspection instated to check the performance of tax officers in the field. Moreover, tax officers began to be schooled in standardised instructions and the 'Method' to use as a way of instilling in them effective means to gauge and measure taxable goods. This administrative bureaucracy relied upon 'a complex system of measurement and bookkeeping, organized as a rigorous hierarchy based on experience and ability, and subject to strict discipline from its central office' (Brewer, 1989: 68).

A comparison of the practices of accounting for taxation in ancient Egypt against those of much more recent episodes of European history is beyond the scope of this paper; such comparisons are likely to be problematical because of the vastly differing social, economic and political contexts. However, the above discussion points to two potentially important insights. First, as the era of ancient Egyptian history covered here was one of foreign conquest (the New Kingdom was dubbed 'the age of Empire'), it would be of interest to explore the extent to which the state felt a greater need to strengthen its tax administration to deal

with the demands of wars, just as has been claimed for the case of 17th century Europe. Secondly, it would be instructive to investigate the extent to which accounting measures and reporting practices were at the heart of the ancient Egyptian tax administration. The distinctive emphasis of this paper is to attempt to piece together a contextualised analysis of the role of accounting practices in the taxation cycle during the New Kingdom. This is an area that has not been explored by previous researchers. Previous studies, conducted in the main by eminent Egyptologists, have tended to focus upon the important tasks of translating ancient Egyptian documents into modern European languages, providing extended etymological commentaries on them, and suggesting alternative ways of dealing with the lacunae in these documents. When accounting issues are considered by them, their main concern tends to be focused upon the technical aspects of accounting entries. While technical aspects of accounting are important, this paper goes beyond such focus by emphasising the broader roles of accounting practices within the social, political and economic contexts of the New Kingdom.

The paper seeks to examine these issues and comment upon their implications for the relationship between accounting and taxation by drawing upon original material which has been translated in full by various Egyptologists. The evidence attests to the important roles played by accounting practices in the various stages of the cycle of taxation. The scribes called upon a variety of accounting practices to document the details they deemed necessary to ensure the assessment, collection, delivery and storage of the appropriate tax levels. Moreover, these accounting practices were sufficiently fine-tuned for an ancient system of human accountability to function, whereby accountability could be traced to every individual involved in the cycle of taxation. For any set of taxation transactions, accounting expertise at the time emphasised several key characteristics that were evident in all the texts I examine below. The most critical of these characteristics were the specification of precise times, the designation of appropriate places, the identification of individuals responsible, and the naming, itemisation, enumeration and valuation of different objects (for example gold and grain) to differentiate them from each other. When some money of account was used as a common denominator, extrinsic measures were derived that identified the relative values of different objects. When a mixture of monies of account were used for different objects, it was still possible for some measure of extrinsic relative valuation to be obtained because these monies of account could be translated into comparable units of value.

The remainder of the paper is organised as fol-

² Despite the prevalence of taxes in national economies across time and space, at least for some tax is taken to imply a violation of individual liberty by the state; indeed a form of oppression and theft (e.g. Friedman, 1970; Spooner, 1973).

laws. The next section provides a brief account of the social, economic, and administrative contexts that prevailed during the New Kingdom. This is followed by some consideration of the various terms used that may be taken to designate 'tax' or such similar concepts and an examination of subjects deemed taxable. Then, I explore the estimation and assessment of tax burden. Thereafter, the involvement of scribes in the collection of taxes is considered in some detail, followed by the transportation of tax revenues from source to final destination (e.g. granaries) and the monitoring and control of deliveries and storage. The penultimate section examines possible manipulations and defalcations of tax and the extent to which taxable subjects had the scope to appeal against tax assessments that they considered to be unfair. The final section brings together the main conclusions of the paper and identifies their key implications.

2. Social and economic contexts of the New Kingdom

The decline of the Middle Kingdom was followed by the Second Intermediate Period (1780–1552 BC) which witnessed the collapse of central authority and the emergence of several centres of local power. During that period, Egypt was invaded by foreign forces from Asia (the Hyksos) who ruled Egypt for nearly 100 years (Kuhrt, 1997: 173) until they were defeated and the New Kingdom (XVIII–XX Dynasties: 1552–1080 BC) was born. The New Kingdom was characterised by foreign conquest and the establishing of a large empire, immense wealth and a high degree of stability, power and maturity (Kemp, 1989: 183). The restructuring of the state and its economy involved the introduction of strict centralised control over the provinces in order to avoid what was perceived as significant loss in state revenue during the Second Intermediate Period. The political, social and economic systems were assumed by the ancient Egyptians to be part of an immutable order of the universe symbolised by the concept of *Maat* which 'implied truth, justice, righteousness, right dealing, order' (Wilson, 1951: 119); it was a quality that related to stability, good rule and sound administration (Lichtheim, 1976).

As in both the Old and Middle Kingdoms, kingship remained a concept of paramount importance which was propagated and promoted as a heaven-

ly-rooted right and a necessary condition for securing order and observing *Maat* (e.g. Kemp, 1989: 184; Kuhrt, 1997: 211). The structure of government reflected functional specialism and geographical location. It comprised three major units: internal government, administration of conquered territories and the dynasty. Internal government was divided into four main departments: the royal domain, the army and the navy, the religious domain, and the civil government. The civil government was maintained by two viziers, one each for Upper and Lower Egypt, instead of just one as in previous times, in order to emphasise the importance of the new administrative order, supported by treasury overseers, town mayors and village chiefs. Each vizier was responsible for tax assessment and collection, execution of directives (van den Boorn, 1988: 266, 283–278), and the efficient functioning of the civil government and the Treasury. Emphasis on centralised control facilitated the maintenance of a departmentalised and hierarchical structure, and the drive to establish civic and individual security coupled with the emphasis on observing justice contributed to the increased motivation to evolve a powerful administration.

The overseers of granaries and cattle were entrusted with regulating economic life and securing and storing taxes. Cities and important towns each had a mayor whose responsibility included the collection of taxes, the assistance of central government's representatives in performing their duties, and the execution of orders received from them. Regular communication between the centre and the provinces was maintained through the viziers' messengers who paid frequent visits to various locations to communicate instructions, perform tasks and monitor the conduct of local affairs. Texts and scenes show the vizier and treasurer meeting every morning in the palace gateway to discuss progress of their affairs. In describing the relationship between higher and lower levels of authority within Egypt during the New Kingdom, O'Conner (1983: 217) has suggested:

'Relationship between the government and the governed showed a mixture of bureaucratic sophistication and other mechanisms emphasizing more personal, direct and, in a sense, "primitive" means of inquiry and decision-making.'³

While the viziers had ultimate responsibility for all civil government affairs, it was the scribes who discharged much of this responsibility on behalf of the viziers. The scribes, typically men and very rarely women, were the learned and calculating members of society upon whom depended the running of the administrative machinery. From a young age, the would-be scribes were educated by their fathers, or by wise elderly men, and, for the most privileged few, by special instructors in the

³ In quoting O'Conner I wish to distance myself from his reference to "'primitive' means of inquiry and decision making", for this assertion contrasts a supposedly ancient inadequacy against a modern ideal. There are two problems with such an assertion: first, ancient practices should be assessed in their own terms and within their unique contexts, and secondly comparisons with the present conflates ancient practices with a non-reflexive use of modern terminology.

Figure 1 Example list of taxes counted		
	OFFICIAL AND PLACE	TAX
719.	Commandant of the fortress of Elephantine Scribe of the recorder of Elephantine Kenbeti of Elephantine Scribe of Elephantine	40 deben of gold, tribute weight 1 chest of (mt-) linen 6 deben of gold, in tribute weight a pedet of raiment a large bolt? 2 deben of gold; 2 pedet of raiment; a large bolt?; 1 chest of (mt-) linen 1 deben of gold; 2 oxen (ng 3- w)
720.	Recorder of Ombos Scribe of the Recorder of Ombos Kenbeti of Ombos	1 deben of gold; 1 deben of gold, in tribute weight 3 large bolts; —deben of silver, in tribute weight 4 deben of gold, in tribute weight 1 ox; 1 two-year-old
721.	Mayor of Zdfu His scribe Recorder of Edfu	8 deben of gold, tribute weight a great bolt? gold (amount?) 1 ox
	Town-Ruler of Pr-mr-yw*	1 deben of gold 1 chest of (mt-) linen; 2 oxen
722.	Mayor of Nekhen Kenbeti of Nekhen	4 deben of gold 3 deben of silver 1 ox 1 two-year-old 3 deben of gold, in tribute weight 1 bead necklace [of gold] 2 oxen 1 chest of (mt-) linen; 1 chest of (g 3- w-) linen
	(Name lost, top row)	Garments, 2 (pdt-) bolts (Linen) 1 great (sm 3- t-) bolt? gold (amount?)
	(Name lost, top row)	1 (xm-dw-) ox, 2 yearlings Gold, linen
*An uncertain town.		

Source: J.H. Breasted, *Ancient Records of Egypt*, Part Two, London: Histories and Mysteries of Man, 1906/1988, 284-285.

Pharaoh's palace. They were taught reading, writing and arithmetic. Once fully trained, they were appointed to exercise their scribal skills in various state projects and held numerous titles depending upon their career progression. Compared to many other 'professional' occupations, the scribal 'profession' was held in high esteem within the social hierarchy and the scribes earned good financial rewards.⁴

3. Defining taxable subjects

It is important to state a word of caution from the outset. In the ancient Egyptian language, there is no exact equivalent to the modern word 'tax'. We can distinguish several words used by the ancient scribes to designate different types of crop or produce collected from subjects or institutions, or delivered by them, to the state: *yp.w*; *b3kw*; *smw*; *yn-w*; *hsb.t*; and *inw*. Gardiner (1941) translates *yp.w* as dues imposed on officials by virtue of

holding a certain office, and *b3kw* as taxes on ordinary people. More precisely *yp.w* refers to items counted and *b3kw* refers to items produced by labour. The word *smw* refers to harvest-yield, but Gardiner (*ibid*) prefers harvest-tax. Gardiner translates *hsb.t* as dues, and *inw* as tribute, but the latter word has also been translated as official gifts (Bleiberg, 1996), while neutrally it refers to additions (to revenue or produce).⁵ Despite the different meanings, all these words seem to refer in one sense or another to collection of revenues for the state, but *inw* appears to be more frequently used in the context of gifts. Because of these translation difficulties, even some of the most notable Egyptologists have tended to be less concerned over the precise matching of modern and ancient terminology. For example, in discussing some texts relating to taxation and land rentals, Gardiner (1941: 60) stated: 'I make no attempt to distinguish between rents, taxes, and simple returns of revenues by employees.' With the exception of *inw*, I will treat all the above words as being equivalent to the collection of crops and produce as state dues or 'taxes'. During the New Kingdom, the following taxable subjects can be differentiated: temples, officials, *khato*-lands, and ordinary people.

The Temples: The temple in ancient Egypt was not merely a religious institution but also functioned as a crucial economic organ of the state (Goedicke, 1979; Janssen, 1979). One text from the Amarna period, 1365–1349 BC, shows that the tax imposed on each temple was enumerated in more than one measure, or money of account, depending upon the type of commodity stated as tax (Murnane, 1995: 30–31). The annual tax liability, set by the state to support the king's new cult, which had to be paid by temples throughout Egypt, was (Murnane, 1995: 30):

Silver:	1 <i>deben</i>
Incense:	1 <i>men</i> -container
Wine:	2 <i>men</i> -containers
Thick cloth:	2 rectangular lengths ⁶

Officials: The question of whether or not state officials were taxed has been subject to some debate. Taken at face value, there is evidence to suggest that state officials paid dues imposed upon their offices (*yp.w*), which are to be distinguished from taxes upon ordinary citizens (*b3kw*). To the

extent that dues were levied on officials, they could in exceptional cases be remitted by the King, as Horemhab, 1332–1305 BC, seems to have done: 'as to the obligation of silver and gold ...[my] majesty remits it, in order that there be not collected an obligation of anything from the official staff (*knb.t*) of the South and North.' (Breasted, 1906/1988, Part Three: 31). The wall decorations and texts in the tomb of the vizier Rekhmire, during the reign of Thutmose III, 1490–1439 BC (Breasted, 1906/1988, Part Two: 282–291) are especially intriguing. The scenes depict Rekhmire receiving local officials bringing dues. For each official, the text states their titles, the names of their towns or localities, and an enumeration of the dues. Over the head of Rekhmire himself the following text was written: 'Inspection of the taxes (*yp.w*) counted to (to the credit of) the hall of the vizier of the Southern City, and counted against the mayors, the town-rulers, the district officials, the recorders of the districts, their scribes and their field-scribes, who are in the South...; beginning with Elephantine and the fortress of Bigeh; made according to the writings of ancient time, by the hereditary prince...[Rekhmire].' (*ibid*, p. 283). Thereafter, a long list of dues is provided, followed by other scenes of dues for the Temple of Amun.

Figure 1 above is a translation of a part of the dues list to illustrate the details, enumeration, and valuations used by the scribes whereby a list of dues is stated against the title and location of each official. These dues are identified by type such as gold, silver, linen, garments, oxen, beads, and bolts. For some items, for example oxen, pure counting of numbers is used, qualified in some cases by animal age (e.g. two-year-old). Bolts are identified by size (e.g. large) and linen by chest as a capacity measure. Gold and silver are expressed in *deben* of weight.

One of the difficulties, however, of interpreting these texts is that the ancient scribes used many of the terms relating to taxation (see earlier) both in their specific technical meanings as well as in a very general sense even in the same text. Hence, it is quite possible for the dues listed against the officials and scribes noted above to simply be referring to amounts they were expected to deliver (as dues collected from others for the state) rather than necessarily being direct dues imposed upon them. Janssen (1975b: 176) has argued that 'It is true that for the sake of equal rights and obligations civil servants of modern states, though receiving their wages from the government, are liable to taxation, but this would be unlikely in ancient Egypt.' The implication here being that state officials, including scribes, did not have to pay taxes simply because the payment of their wages by the state obviated the need to tax them. An alternative

⁴ For a more detailed analysis of the rise of scribes in ancient Egypt see Ezzamel (1994).

⁵ I acknowledge the help of Stephen Quirke in offering the alternative translations of the above words in contrast to those favoured by Gardiner.

⁶ The *deben* was a money of account based on weight and during the New Kingdom it corresponded to about 91 grammes of gold, silver or copper. (Janssen, 1975a: 101). The *men* container was a capacity measure used for valuable liquids or items, and rectangular lengths were used for measuring textiles.

explanation is that state officials such as scribes were exempt from any taxes because they had no physical produce. This privilege was noted in several texts, and contrasted against the misery inflicted upon others, such as cultivators, who had to pay tax. For example, a teacher offers the following advice to his pupil (Papyrus Anastasi V, Caminos, 1954: 247):

'I am told that you have abandoned writing and whirl around in pleasures, that you have applied yourself to working in the field and have turned your back upon the god's words.... (as to the) scribe, he is a controller of everyone. He who works in writing is not taxed, he has no dues (to pay).'

Khato-lands: *Khato*-lands were earmarked to supply revenues to the Crown. They were of considerable sizes, as evidenced from the Wilbour Papyrus (Gardiner, 1948, Vols. II&III, see also Katary, 1989), and included estates owned by local temples, some of which may have been cultivated previously by individuals as temple tenants before the land reverted back to the Crown. Responsibility for collecting the yield (in the form of harvest-tax) rested with some important official of high rank, such as a town mayor, a temple prophet (Gardiner, 1941: 23;), an overseer of cattle, or the Overseer of the King's Apartments (Gardiner, 1948, Vol. II: 165). Taxes collected from these lands were then used for various state purposes, such as payments to workmen engaged on state projects.

Ordinary people: A significant part of state revenues was tax (*b3kw*) levied against ordinary citizens, who may have ranged from reasonably well-off individuals, such as tenant farmers, to others of much more modest means, such as field labourers (Gardiner, 1941: 20–22). This tax was extracted from produce, such as wheat, corn, and other foodstuffs such as cattle, fish, and game. It seems that all citizens with a physical/material produce had to pay taxes, unless they were exempt for some obvious reason; such as abolishing tax on fodder gathered for festive and funerary offerings in the Amarna period, 1365–1349 BC (Murnane, 1995: 238). Egyptian citizens and subjects in conquered territories were taxed. These foreign subjects could pay taxes (*b3kw*) similar to those levied against native Egyptians, tribute (*yn-w*), or dues (*hsb.t*) as evidenced from a scene from the reign of Ramesses II, 1290–1224 BC (Breasted, 1906/1988, Part Three: 206), and a text from the reign of Ramesses III, 1193–1162 BC (Breasted, 1906/1988, Part Four: 82), where the King states that he has taxed the citizens of Egypt, the land of the Negroes and the land of Zahi 'for their impost every year, every town by its name, gathered together, bearing their tribute...'

4. Tax assessment and collection

4.1. Tax assessment

Tax assessment involved two steps; initial tax estimation and final tax assessment. The practice of estimating taxable capacity before harvest noted in the Middle Kingdom (Smither, 1941) continued into the New Kingdom. In estimating the produce of cultivated land, proxies for taxable crop such as the size of the plot, its quality, and its supporting facilities like lakes, canals, etc. were used to estimate tax. Gardiner (1941: 20) notes how the role of the scribe was 'necessary to check the amount of tax with the assessment-lists'. Once the crop was reaped, tax liability could then be determined more precisely. The purpose of estimating tax liability is not stated in any of the surviving documents. However, given the well-documented interest of the ancient Egyptians in planning and control (James, 1985; Kemp, 1989), it would not be far fetched to say that one of the aims would have been to plan work on state projects and the running of the economy, and to establish a control yardstick against which actual tax liability could be compared. Tax scribes were central to tax assessment and collection. In Papyrus Harris I (reign of Ramesses III, 1193–1162 BC), the king, addressing his god, states (Breasted, 1906/1988, Part Four: 167):

'I made for thee archers and collectors of honey, delivering incense; I established for them tax officials ...to conduct them and to collect their annual impost for thy august storehouse, in order to fill the magazines of thy house with numerous possessions, in order to double thy divine offerings, for presentation to thy ka.'

Similarly, Papyrus Lansing (James, 1985: 103) states: 'The scribe moors the river bank. He estimates the harvest tax, attended by the lackeys carrying staves, and Nubians with clubs.'

Final tax assessment was described by a tax scribe (James, 1985: 129):

'The harvest of the crown lands of Pharaoh – may he live, be prosperous and healthy – which are under my lord's control, is being reaped with excellent attention and good care. I note down the ass-loads of barley which are cut daily with the sickle, and arrange for their removal (from the fields). The threshing floor is set out, and I shall arrange for a level area to be set out for 400 ass-loads. At midday, when the barley is hot, I put all the people who are cutting with sickles on to gleaning, with the exception of the scribes and weavers who make away their daily measure (of grain) from the gleaning of yesterday.'

The above quote demonstrates the methodical way used by the scribe to ensure the careful reaping of the crop (in this case grain), and its trans-

portation from the field to the threshing floor that had already been well-prepared. Once the preparation of crop on the threshing floor was complete, it was measured in order to levy the appropriate level of tax.

The Wilbour Papyrus (Gardiner, 1948) contains numerous examples of harvest-tax assessments which are worthy of study. Examination of the relevant entries in this Papyrus reveals the use of a carefully articulated set of accounting and administrative practices. The details of the text deal with *khato*-land tenure of various individuals (see Figure 2). Along with the exact measures of land determined for each plot assigned to a given individual, there is frequently an assessment of harvest-tax. The land measures are given in *aroura* (each equal to 2,735 sq.m., or about two thirds of

an acre). The harvest-tax or rent due was regularly assessed in terms of capacity measures, such as *khar*, (72.68 litres), *oipe* (18.17 litres or 1/4 of *khar*), and *hin* (1/10 of *oipe*). Figure 2 shows two different types of crop collection: quantities of seed required for cultivation and dues on cultivated land.

Concerning the quantities of seed required for cultivation, *mimi* (items 110–112), the text shows plot measurements in land-cubits, converted into some common denominator using the multiplier 6 2/3 and then the product is converted into sacks of grain. For example, in item 110 we have 300 times 6 2/3 which gives the figure of 2,000 units. This last figure is then converted into the required amount of five sacks of seed. As one sack = one *khar* = four *oipe*; five *khar* = 20 *oipe*; 2000/20 =

Figure 2
Example of land tax assessment

- § 108 THE HOUSE of Ra'messe-ma'a-miamün.
MEASUREMENT made to the north of the backland of Sma'a:
Land cultivated by the cultivator Merön 30, mc. 5, mc. 150
Apportioned for the House of Thoth of P-Wadjoi sacks 11½
- § 109 THE HOUSE of the (King's) Great Wife Henwōte.
42, 41 MEASUREMENT made to the north of the backland of Sma'a:
Land cultivated by the cultivator Penhasi 10, mc. 5, mc. 50
[Apportioned for] the House of Thoth of P-Wadjoi sacks 3½
- § 110 THE HAREM in Memphis:
43, 2 DOMAIN of this house under the authority of the Mayor of Har[dai].
MEASUREMENT made in the island north-east of [the Vill]age of Inro[y]she[s]:
Land cultivated by the hand of the quartermaster Pentwēre land-cubits 300. ½. 6½ makes (taken) 2,000,
mimi, sacks 5
- § 111 THE HAREM (in) Mi-wēr:
43, 6 DOMAIN of this house under the authority of the overseer of cattle of Amün.
MEASUREMENT made in the *parē*-land east of the House of Thoēris:
Land cultivated by the hand of the deputy of the overseer of cattle Hōri land-cubits 50. makes (taken)
333½, *mimi*, sacks 1½ 1/8
- § 112 DOMAIN of this house under the authority of the overseer of cattle Pkatja.
43, 10 MEASUREMENT made in the island north-east of [Pi-p-]ma:
Land cultivated by him land-cubits 100. ½. 6½ makes (taken) 6[66]½, *mimi*, sacks 1¼ 1/8
- § 113 KHATO-LAND of Pharaoh under the authority of the [standard-]bearer of the Residence Merenptah.
MEASUREMENT made to the north of the backland of Sma'a:
Land cultivated by the cultivator Pra'nakhte 20, mc. 5, mc. 100
43, 15 Apportioned for the House of Thoth of P-[Wadj]oi sacks 7½
- § 114 KHATO-LAND of Pharaoh under the authority of [the Overseer of Proph]ets.
MEASUREMENT made to the south of Pi-[Wayna]:
Land cultivated by the hand of the prophet Wen[nofrē] 20, mc. 5, mc. 100
Apportioned for the House of Seth, [lord of Pi-]Wayna sacks 7½
- § 115 KHATO-LAND of Pharaoh under the authority of the Mayor of Hardai.
43, 21 MEASUREMENT made in the basin (?) (*hmm*) south of the Village of Weben:
Land cultivated by the hand of the quartermaster Pentwēre 8, mc. 5, mc. 40
MEASUREMENT made to the south of Mi-ēhu:
Land cultivated by him 12, mc. 5, mc. 60
- § 116 KHATO-LAND of Pharaoh under the authority of the prophet Merybarsē.
43, 26 MEASUREMENT made to the south-east of Iy-idhu:
Land cultivated by him 30, mc. 5, mc. 150
Apportioned for the House of Nephthys sacks 11½

Source: Gardiner, A.H. (Ed.) (1948), *The Wilbour Papyrus*, Volume III: Translations, p45. Oxford; Oxford University Press.

Figure 3

Example of levying tax on the basis of harvest quality

- § 77 THOSE OF THE Mansion of Ra'smesse-ḥek-Ḫn in the House of Rē north of Ḫn:
 DOMAIN of this house (administered) by the hand of the controller Nebwedjfa.
 T MEASUREMENT made in the *parē*-land east of the Village of Djasasati:
 34, 4 Land cultivated by the cultivator Penhasi 50, mc. 10, mc. 500
 Another 30, mc. 7½, mc. 225
 Another 30, mc. 5, mc. 150
 Apportioned for the House of Amen-Rē, King of the Gods, (in the) domain of the Nome sacks 62½
 T MEASUREMENT made in the Lake of Amūn:
 34, 9 Cultivated land found dry .10
 T MEASUREMENT made in the New land of T-Ḳaha west (of):
 Land cultivated by him 10, mc. 5, mc. 50
 T MEASUREMENT made to the north of the Castle of Meryrē:
 Land cultivated by him 5, mc. 5, mc. 25
 34, 14 Apportioned for the Mansion of Pharaoh (in the) domain of Ḫardai sacks 1½
 T MEASUREMENT made in the *haru*-grove west of this place:
 Land cultivated by him 3 AR., mc. 5, mc. 15
 [Apportioned for the Mansion of Pharaoh in the House of Amūn, (in) this domain (sacks) 1½
 T MEASUREMENT made in the Mound of Rē:
 Land cultivated by him 60, mc. 5, mc. 300 dry, arouras 20.
 34, 20 Apportioned [for the] Mansion of Pharaoh (in) this domain (sacks) 22½

Source: Gardiner, A.H. (Ed.) (1948), *The Wilbour Papyrus*, Volume III: Translations, p35. Oxford; Oxford University Press.

one *oipe* per 100 units. The 1/3 figure adjacent to the 300 has been interpreted by Gardiner (1948, II: 108–109) as a fraction multiplied by 10 then subtracted from 10 to arrive at the multiplier of 6 2/3. The rate arrived at above, of one *oipe* of *mimi* per 100 units, holds for all three parts of the text and for similar entries throughout the Wilbour Papyrus.

In the case of the dues (items 108–109; 113–116), land is measured in *aroura* (the first number stated) and a multiplier per *aroura* (the second number) expressed as mc, which Gardiner designates as 'measure of corn'. The two figures are then multiplied to produce a figure of total corn measures against which dues of about 13 1/3 (or 7.5 %) are levied.⁷ Hence, for item 108 we have: 30 *aroura* times 5 mc = 150 mc taxed at 13 1/3 (7.5 %) = 11 ¼ sacks. The mc measure therefore appears to be a common denominator that was used to convert a given plot of land into a figure equivalent to taxable crop. This raises the question: were all plots of land, irrespective of their type or quality, taxed at exactly the same rate?

Figure 3 suggests that the harvest-tax assessment was made responsive in a strict linear proportionality to two variables; the area and quality (fertility)

of land. Thus, the scribes had to assess the precise quality of each plot of land and determine the tax liability per *aroura*, the total tax liability would then be the simple product of multiplying the number of *aroura* by the appropriate tax bracket for that type of land. The tax scheme had three assessment rates of land quality (Janssen, 1975b: 143 contends that these could represent the net revenues of the plot; i.e. total yield less costs) which occurred with different frequencies (shown here in brackets) in the text, 5 (450 instances), 7 ½ (16 instances), and 10 (25 instances) per one *aroura*. In Figure 3 these three different multipliers were used in the case of different plots of land cultivated by the same man, Penhasi, thereby making the assessment sensitive to expected productivity and size of the plot.

4.2. Tax collection

One of the most detailed tax documents to have survived to the present time is Papyrus Turin 1895+2006, the reign of Ramesses XI (1110–1080 BC), which is a report by the scribe of the necropolis Dhutmose on tax collection from various places south of Thebes. Gardiner (1941: 23), cites additional evidence which suggests that the reason for entrusting the collection of taxes to the necropolis scribe was in order for the corn collected to be used to pay for rations or wages of the necropolis workmen. Because of the impressive amount of detail in this papyrus I reproduce a translation of its *recto* in full below.⁸

In Figure 4, the first number to the left refers to page number and the second to line number on the original papyrus. To make the analysis easier to

⁷ Janssen (1975b: 141–147) has argued that 7.5% is perhaps too low to be considered as tax and hinted that this rate may have represented instead temple revenues; this however remains a conjecture.

⁸ While the *verso* contains further tax collection from foreigners, it belongs to a different year from that of the *recto* and it contains no further illuminating information, and hence I will not examine it here.

Figure 4
Tax collections from different sources

- 1, 1 YEAR 12, second month of the Inundation season, day 16, under His Majesty the King of Upper and Lower Egypt, the Lord of the Two Lands, Menma'rē-setpen[ptah, the son of Rē, the Lord of Diadems], ¹ Ra'messe-kha'emwēse-mereramūn, the god ruler of Heliopolis, given life eternally [and for ever . . .].
- 1, 3 DOCUMENT of receipts of corn of *khato*-land of Pharaoh from the hand of the prophets [of the temples of Upper Egypt which ?] ¹ the fan-bearer on the right of the King, the Royal scribe, the general, the overseer of granaries of [Pharaoh, the King's son of] ¹ Cush, the commander of southern lands, the leader of the troops [of Pharaoh] Penhasi [ordered to be delivered ?].
- 1, 6 DONE by Dhutmosē, the scribe of the great and noble Necropolis of Millions [of Years of Pharaoh].
- 1, 7 [BROUGHT] to the necropolis [of] the corn of *khato*-lands of Pharaoh by the hand of the prophet of Such[us Pḥeni].
- 1, 8 [SUMMARY] of receipt of it:

The bottom third of the page is lost. It was probably blank, since p. 2 appears to be the direct continuation.

- 2, 1 RECEIVED in Year 12, second month of the Inundation season, day 16, in the town of Imiotru by the scribe Dhutmosē and the two janitors ¹ from the hand of the prophet of Suchus Pḥeni, the scribe Saḥtnūfē and the deputy-superintendent of the House of Suchus Pwōnesh, ¹ of the corn of *khato*-lands of Pharaoh 54 $\frac{2}{3}$ sacks. The Northern Loam: from the hand of the Medjoy-policeman 'An'khatir, corn of harvest-tax 80 sacks. Total, 134 $\frac{2}{3}$ sacks.
- 2, 5 RECEIVED in Year 12, second month of the Inundation season, day 21, on the roof of the garner by the mayor of the West of the City Pwerō, of the corn ¹ which the scribe of the Necropolis Dhutmosē brought from the town of Imiotru. Entered into the first magazine (named) 'The garner ¹ overflows', 131 $\frac{2}{3}$ sacks; barley, 5 sacks. Total, 136 $\frac{2}{3}$ sacks.
- 2, 8 Received in Year 12, third month of the Inundation season, day 19, in the town of 'Agni by the scribe of the Necropolis Dhutmosē and the two janitors, ¹ corn 33 $\frac{2}{3}$. 3 $\frac{2}{3}$ sacks.
- 2, 10 Arrived and delivered to the scribe Nesamenopē and the female musician of Amūn Hentowē in year 12, third month of the Inundation season, day 23, ¹ corn, 33 sacks. 3 $\frac{1}{4}$ $\frac{1}{8}$ $\frac{1}{8}$. Deficit, to the account of the fishermen, $\frac{2}{7}$ $\frac{1}{16}$ $\frac{1}{11}$ sacks, to the account of the fishermen [sic]. Total, sacks.
- 2, 12 RECEIVED in the town of Imiotru by the scribe Dhutmosē and the two janitors (delivered) by the hand of ¹ the foreigner Pkhal in Year 12, third month of the Inundation season, day 28, 10 sacks. Total come from him, 183 $\frac{2}{3}$ sacks.
- 2, 14 ARRIVED and delivered to the mayor of the West of the City Pwerō in Year 12, third month of the Inundation season, day 29, of the ¹ corn of the foreigner Pkhal, 10 sacks; given to the cultivator Pbeki.

Figure 4 (continued)

- 3, 1 Received at the City Year 12, fourth month of the Inundation season, day 12, of the corn of the House of Mont, Lord of Thebes, by the scribe Dḥutmosē of the Necropolis and the two
- 3, 2 janitors, ¹ from the hand of Nesamūn, the scribe of the counting of the House of Amen-Rē, King of the Gods, who is under the authority of the prophet of Mont Amenemōne, 6 sacks.
- 3, 3 Details of it: ¹ the foreigner Penḥasi, 4 sacks; the builder Kṛūr, 2 sacks; total, 6 sacks. Given to the mason Irusharē of (?) the . . . , $\frac{1}{4}$ sack (?).
- 3, 4 Received in Year 12, fourth month of the Inundation season, day 13, in the house (called)
- 3, 5 'The Portable Shrine of King Usima'rē-miamūn', by the scribe of the Necropolis Dḥutmosē and the two janitors from the hand of ¹ the female musician of Amūn Mosh'enūfe, the wife of the Master of the Portable Shrine Hrainūfe, 30 sacks.
- 3, 6 RECEIVED in Year 12, fourth month of the Inundation season, day 14, from the hand of the scribe of the Necropolis Dḥutmosē and the two janitors, by the female musician of Amūn
- 3, 7 Hentowē and the scribe Nesamenopē, ¹ of the corn of the Portable Shrine of King Usima'rē-miamūn under the authority of the Master of the Portable Shrine Hrainūfe, 30 sacks. Entered into the first magazine 'The garner' overflows'.
- 3, 8 RECEIVED on this day of the corn of the House of Mont, Lord of Thebes, from the hand of the foreigner Usihēnakhte, 8 sacks. Previously on fourth month of the [Inundation season, day 1] 2, 6 sacks; total 14 sacks.
- 3, 9 YEAR 12, fourth month of the Inundation season, day 18, setting forth from the West of the City by the scribe of the Necropolis Dḥutmosē with the boat of the skipper Dḥutweshbi and the boat of the fisherman (Kadōre).
- 3, 10 RECEIVED in the town of Esna in Year 12, fourth month of the Inundation season, day 20, by the scribe of the Necropolis Dḥutmosē and the two janitors, of the 402 sacks of corn of ¹
- 3, 11 the House of Khnūm and Nebu from the hand of the deputy-superintendent Pwerō and the temple-scribe Penḥasi in the granary of Khnūm and Nebu at Esna, 337 sacks. Details of it:
- 3, 12 RECEIVED on this day from the hand of the deputy-superintendent Pwerō: the cultivator
- 3, 13 Sahtnūfe, of his harvest-tax, 120 sacks. ¹ Again from his hand and the cultivator Butehamūn and the cultivator (Nakht?)amūn, 80 sacks. Again from their hands, $6\frac{2}{3}$ sacks. Again from
- 3, 14 their hands, $13\frac{2}{3}$ sacks. Total 220 sacks, put upon the boat of ¹ the skipper Dḥutweshbi.
- 3, 15 RECEIVED from their hands on this day by the scribe Dḥutmosē. Put upon the boat of the fisherman Kadōre, $98\frac{2}{3}$ sacks (and) $24\frac{2}{3}$ sacks; total, $123\frac{1}{3}$ sacks.
- 3, 16 TOTAL, $343\frac{1}{3}$ sacks. Given for the expenses, $6\frac{2}{3}$ sacks. [Placed?] to (the credit of) Pharaoh, 337 sacks. Balance on the account of the temple-scribe Penḥasi, 65 sacks. Total, 402 sacks.
- 4, 1 RECEIVED in Year 12, fourth month of the Inundation season, day 24, by the mayor of the West of the City Pwerō, of the corn brought by the scribe of the Necropolis Dḥutmosē and
- 4, 2 the two janitors ¹ in the boat of the skipper Dḥutweshbi and the boat of the fisherman Kadōre,
- 4, 3 from the town of Esna, 337 sacks. Details of it: Arrived and delivered to the mayor, ¹ of the corn of the fisherman Kadōre, $110\frac{1}{4}$ sacks. Given as rations to the fisherman Yetnūfe 1 sack; total $111\frac{1}{4}$ sacks. Deficit, 2 sacks. The details of the deficit: the janitor Khensmosē, $1\frac{1}{4}$ sacks.
- 4, 4 Nesamenopē, $\frac{1}{4}$ sack; Kadōre, $\frac{1}{4}$ sack.
- 4, 5 ARRIVED and delivered to the mayor of the West of the City, of the corn of the skipper Dḥutweshbi, $203\frac{2}{3}$ sacks. Given for the expenses of the skipper, 20 sacks. Total, 225 sacks.

Figure 4 (continued)

- 4, 6 RECEIVED in Year 12, fourth month of the Winter season, day 5, from the hand of the scribe of the counting of the House of Amūn Nesamūn by the scribe of the Necropolis Dhutmosē and the janitor of the Mansion Dhutmosē, spelt, $8\frac{2}{3}$ sacks, barley $2\frac{1}{4}$ sacks. Details of it: ¹ the chief of the ergastulum Dhutemhab, 7 sacks; the brander (of cattle)² Pkhal, $1\frac{2}{3}$ sacks, total $8\frac{2}{3}$ sacks; the herdsman Mīo, $1\frac{1}{4}$ sacks; the cultivator Khensmosē, $\frac{1}{4}$ sack, TOTAL, $2\frac{1}{4}$ sacks; TOTAL, corn, $10\frac{2}{3}$ sacks.
- 4, 8 ARRIVED and delivered to the female musician of Amūn Hentowē [on] this day in the weigh-house (?) of the House of Maiu (?) by the scribe Dhutmosē, $10\frac{2}{3}$ sacks.
- 4, 9 RECEIVED on this day in the town of Npiimu, from the hand of the herdsman of the Mansion Penhasi, 4 sacks; the chief of Medjoy-policemen, Nesamūn, 1 sack; the fisherman Kharoy, $1\frac{1}{4}$ sacks; ¹ the fisherman Pnakhtemthō $1\frac{2}{3}$ sacks.
- 4, 11 RECEIVED in the town of Imiotru from the hand of the scribe of the counting Nesamūn from ploughing of the foreigner Iunē, 12 sacks; the foreigner Pkhal, $1\frac{1}{4}$ sacks. TOTAL, corn, $13\frac{2}{3}$ sacks.
- 5, 1 RECEIVED in Year 12, first month of the Summer season, day 9, of the 12 sacks of spelt fetched from the town of Imiotru from the ploughing of the foreigner Iunē, ¹ together with the $1\frac{1}{4}$ sacks of the foreigner Pkhal, TOTAL, corn, $13\frac{2}{3}$ sacks. The herdsman Penhasi, son of Pkamen, in the town of Nimu, 4 sacks; ¹ the chief of Medjoy-policemen, Nesamūn, 1 sack, TOTAL, 5 sacks. RECEIVED on this day by the female musician of Amūn Hentowē on top of the garner. ¹ Entered into the first magazine ('The garner) overflows', 12 sacks, $6\frac{1}{4}$ sacks. Entered into the storeroom which is on top of 'the Pure Land', of corn, $18\frac{2}{3}$ sacks.
- 5, 5 RECEIVED in Year 12, fourth month of the Winter season, day 13, from the hands of the two janitors, of the corn of the store of Pharaoh which is on the account of the scribe of the counting of the House of Amūn Nesamūn, 4 and 20 sacks. ¹ TOTAL COME from him of the 72 sacks of corn, $55\frac{2}{3}$ sacks. Deficit, $16\frac{2}{3}$ sacks.
- 5, 7 RECEIVED in Year 12, fourth month of the Winter season, day 13, from the hand of the scribe Sahtnūfe of the corn of the foreigner Eroy, 20 sacks. Details of it: the deficit of ¹ grain of the House of Suchus, lord of Imiotru, $10\frac{2}{3}$ sacks; grain of the store of Pharaoh which is on the account of Nesamūn the scribe of the counting belonging to the House of Amen-Rē, King of the Gods, 8 sacks; ¹ what the prophet of Suchus paid in excess, $1\frac{2}{3}$ sacks. TOTAL, 20 sacks.
- 5, 10 RECEIVED . . . from the scribe of the counting of the House of Amūn Nesamūn of corn of the store of Pharaoh from the hand of. . .
- 5, 11 RECEIVED [from the scribe of the counting] of the House of Amūn Nesamūn. Given to the priest of Mut, 3 sacks . . . TOTAL (?). . .

Source: Gardiner, A.H. (1941). 'Ramesside Texts Relating to the Taxation and Transportation of Corn.' *Journal of Egyptian Archaeology*, 27 (December): 23–34.

follow, I will proceed to examine the text in stages, with the ancient scribe having made my job easier by the spaces he left in the text to separate it into what looks like self-contained parts. Page 1 (lines 1–8) sets the scene by indicating the day, month, year and the reign of the Pharaoh. This is followed by a list of the officials involved in the delivery or receipt of the corn from the *khato*-land.). The collection and delivery of tax begins on p. 2 (lines 1–15). We can attempt a reconciliation between the amounts of corn received and disposed off below:

	Received
54 2/4 + 80 =	134 2/4
33 2/4 + 3 2/4* =	37
10 =	10
Difference	2
Total:	183 2/4
	Disposed of
131 2/4 + 5* =	136 2/4
33 + 3 13/32* =	36 13/32
10 =	10
Difference	19/32
Total:	183 2/4

* entries with this sign refer to barley whereas the remaining entries refer to spelt (emmer), all being types of corn.

The totals of the two sides are very close, with two sacks missing under received and 19/32 under disposed off. The difference of two sacks can be traced to the first set of entries, where Dḥutmosē noted his receipt of two amounts of corn (54 2/4 + 80 sacks) which were then recorded as 136 2/4 sacks entered into the granary magazine. Gardiner (1940: 26) readily suspects foul play by interpreting this difference as arousing ‘suspicion of cooking’ the books, but of course there is also the possibility of an error by the scribe. The difference of 19/32 (the aggregate of 2/4 + 1/16 + 1/32) was recorded on line 11 as deficit to the account of the fisherman. Gardiner (1941: 28) surmises that this difference is made up of 2/4 sack deducted for the fisherman as payment for transporting spelt (emmer) and 3/32 for transporting barley, but the entries do not offer any conclusive support for this interpretation.

Entries on page 3 can be divided into two parts. The first part (lines 1–8) is damaged, hence I will not attempt to reconcile the figures. The second part (lines 9–16) relates to the first five lines on page 4 and covers two main activities: (i) receipts of corn by the tax official from the cultivators and its loading onto the boats, and (ii) deliveries of corn to the granaries:

Receipts		Sacks	
Total tax assessment for Kḥnum and Nebu		402	
Balance remaining (with Penḥasi)		(65)	
Received by Dḥutmosē from Penḥasi and Pwer'o;		337	
Details of which:			
<i>Boat of Dḥutweshbi</i>		<i>Boat of Ḳadōre</i>	
120		98 ¾	
80		24 2/4	
6 2/4			
13 2/4			
220	+	123 ¼	= 343 ¼
Less expenses:		(6 ¼)	
Credit to the Pharaoh:		337	
Deliveries			
<i>Boat of Dḥutweshbi</i>		<i>Boat of Ḳadōre</i>	
203 ¾		110 ¾	
20		1	
(1 ¼ + ¼ + 1/8 + ¼) =		1 7/8	
223 ¾		113 1/8	= 336 7/8

The receipts part of the text shows that the tax liability for Khnūm and Nebu can be fully accounted for in terms of boat loads and the balance for which Penḥasi was held accountable. However, there is one anomaly relating to the $6\frac{1}{4}$ sacks entered as expenses, for these do not appear to be part of the tax liability of 402 sacks. It may be that this amount was raised additionally on the volition of the deputy-superintendent from the cultivators (see Gardiner, 1941: 31–32), perhaps to ensure that target tax deliveries were met, if such targets were set by his superiors, but this explanation remains speculative.

The deliveries part of the text raises more questions. While in total this part balances with the receipts part (337 sacks), the deliveries from each boat do not match with the receipts of each boat. Why did the boat of Dhutweshbi deliver $3\frac{3}{4}$ sacks more than it received? And why did the deliveries from the boat of Kadōre fall $10\frac{1}{8}$ sacks short of what was received? In the case of the latter, the expenses of $6\frac{1}{4}$ sacks referred to earlier would have been included, leaving $3\frac{7}{8}$ sacks shortage which are nearly cancelled out by the excess delivery of Dhutweshbi ($3\frac{3}{4}$ sacks). Could this difference be accounted for by a transfer of load in mid-journey between the two boats? The text does not tell us, nor does it explain why Dhutweshbi received 20 sacks as compensation for expenses whereas Kadōre received only $\frac{1}{4}$ sack (except if the $6\frac{1}{4}$ sacks mentioned above were part of his compensation). The ambiguity is increased further by noting that in adding up the deliveries from the boat of Dhutweshbi the scribe arrives at a total of 225 sacks instead of $223\frac{3}{4}$ sacks.

The next section consists of parts of the entries on pages 4 and 5 (lines 4.6 – 4.11; 5.1–5.4), and the reconciliation of receipts and disposals is relatively straightforward except for an amount of barley ($2\frac{1}{4}$ sacks). At the beginning of the entries, there are two quantities of emmer and barley received, each quantity divided into its component parts and then totalled together again. There are $8\frac{2}{4}$ sacks of emmer ($7 + 1\frac{2}{4}$), and $2\frac{1}{4}$ sacks of barley ($1\frac{2}{4} + \frac{1}{4}$), the two types adding up to $10\frac{3}{4}$ (as shown in the text) which was accounted for by being delivered to the weigh-house. This is followed by receipts to account for five sacks of emmer ($4+1$) and three sacks of barley ($1\frac{2}{4} + 1\frac{2}{4}$) and then by $13\frac{2}{4}$ more sacks (12 emmer + $1\frac{2}{4}$ barley). Of these quantities, we can trace deliveries to granaries of $13\frac{2}{4}$ sacks (12 emmer + $1\frac{2}{4}$ barley) and five sacks ($4+1$) of emmer, giving a total of $18\frac{2}{4}$ sacks as stated in the text. However, there is no further trace of the three sacks of barley ($1\frac{2}{4} + 1\frac{2}{4}$) mentioned earlier. Gardiner (1941: 34) surmises that this amount of barley may have been returned to the fisherman Kharoy as fees for transporting corn, but again this

is merely a conjecture.

The last part of the *recto* (lines 5.3–5.11) looks like a final summary that aggregates all the tax collection and delivery together but any attempt at reconciling it is frustrated by the lacunae. Despite these problems, the accounts have a measure of internal integrity which renders their entries meaningful. This allows us to appreciate the significance of the whole text in terms of its overall organisation and its implications for accountability and control. For every case of tax collection or delivery, the date and location of the activity are noted clearly, as are the names of all the individuals responsible. The recording system also quantified the precise tax amounts whose collection was entrusted to a scribe or an official, and accounted for the delivery of tax collected to the king's store-rooms or granaries. A summary section at the end acts as a check to ensure that the earlier detailed entries add up to the expected total. The responsibility of the individual scribes put in charge of tax collection, and the officials who received the taxes in the granaries could, if required, be traced on a daily basis. Moreover, the aggregate accountability of the scribes in charge of tax collection could also be summed up, as evidenced from the last section of the document (lines 5.5–5.11) which traces the aggregate accountability of the scribe Nesamūn.

5. Accounting for the transportation and storage of tax

Transportation of crops from source to ultimate destination posed a control problem for central administration: how to ensure that tax collected in kind is protected from the personal discretion of the scribes and boat skippers who supervised the cargo en-route. In Papyrus Turin 1895+2006 we caught a glimpse of the procedures used to monitor the transportation of taxes from source to state storehouses and granaries. For each boat, the name of the skipper and the amounts of tax entrusted to him for transportation were stated. Once the boat reached its final destination, each skipper had to account for the amounts of tax he transported. However, the significance of Papyrus Turin 1895+2006 relates more to detailing responsibility for tax collection and delivery. My concern in this section is to examine more detailed evidence on the transportation of taxes. Papyrus Amiens, which Gardiner (1941: 43) dates to one of the ephemeral successors of Ramesses V (from 1156 BC onwards), offers some useful insights as shown in a translation of one representative part of it.

Figure 5 indicates that a fleet of 21 ships was used to transport corn collected as taxes. The fleet, which belonged to the temple of Amun, was made of large ships, with two of them each carrying over

Figure 5

Example of transportation of tax by boat

- 2, 1 Given to him in the Island of Amūn He-seizes-every-land, on the threshing-floor of the controller 'Anerē, being corn of the House of Amūn, domain of Khen-Min, under his authority, 50 sacks.
- 2, 2 Given to him in the Island of Amūn Filler-of-granaries, on the threshing-floor of the scribe Pmerit, being corn of domain of the House of Ra'messe-miamūn of He-(e)-pwoid, 12½ sacks.
- 2, 3 TOTAL, given to him, 12½ 840 sacks. Rations of his crew, 59 sacks.
- 2, 4 SHIP OF the commander of ships Mins'ankh, son of Bekamūn, of the House of Amūn, under his authority:
- 2, 5 Given to him in the Island of Amūn Overrunning -his-boundary, on the threshing-floor of the priest Keson, being corn of domain of the House of Ra'messe-miamūn of He-e-pwoid, under his authority, 600 sacks. Balance, 335. Domain of Tjebu, 37½ sacks.
- 2, 6 Given to him in this place on this threshing-floor, being corn of domain of the House of Seti-merenptah in the House of Amūn, under his authority, 227½ sacks.
- 2, 7 Given to him in the Island of Amūn Filler-of-granaries, on the threshing-floor of the scribe Pmerit, being corn of domain of the House of Ra'messe-miamūn of He-(e)-pwoid, 10 sacks.
- 2, 8 Given to him in the Island of Amūn He-seizes-every-land, on the threshing-floor of the controller 'Anerē, being corn of the House of Amūn, domain of Khen-Min, by the hand of the controller 'Anerē, 100 sacks.
- 2, 9 TOTAL given to him, 10 700 sacks. Rations of his crew, 63 sacks.
- 2, 10 SHIP OF the commander of ships Wennofrenakhte, son of 'Ashafēnakhte, of [this] house, under his authority:
- 2, 11 Given to him in the Island of Amūn [Overrunning]-his-boundary, on the threshing-floor of the priest [Keson], being corn of domain of the House of Ra'messe-mi[amūn] . . . , 600 sacks. Balance, 140 sacks. House of [Sethos], 460 [sacks].
- Some twelve or more lines are lost at the bottom of the page.*
- 3, 1 Given to him in the Island of Amūn Spirit-in-Thebes, on the threshing-floor of the cultivator 'Ashafēheryeb, being corn of this domain, 232 sacks.
- 3, 2 Given to him, being corn of domain of the House of Amen-Rē, King of the Gods, which Pharaoh newly founded, under the authority of the Steward; which had been in the ship of Seti, son of Psekhemnē, 52½ 145½ sacks. Balance, 45 130 sacks.
- 3, 3 TOTAL, given to him, 50 930½ sacks. Balance, 45 920½ sacks. Rations of his crew, 40½ sacks.
- 3, 4 SHIP OF the captain 'Ashafēmhab, son of Neferronpe, of the House of Amūn, under his authority:
- 3, 5 Given to him in the new island west of Inmut, on the threshing-floor of the controller Pentwēre, being corn of domain of the House of Ra'messe-miamūn of He-e-pwoid, under his authority, 260 sacks. Balance, 84½ sacks. The domain of Pharaoh, 175½ sacks.
- 3, 6 Given to him in this place, on the threshing-floor of the cultivator Peieroy, son of Amen-hima'u, being corn of this domain 100½ sacks.
- 3, 7 Given to him in this place, on the threshing-floor of the controller Phesy, son of Pentwēre, being corn of domain which Pharaoh newly founded, under his authority, 328½ sacks. Balance, 128½ sacks. Domain of Khen-Min, 200 sacks.
- 3, 8 Given to him in the Island of Amūn Spirit-in-Thebes, on the threshing-floor of the cultivator 'Ashafēheryeb, being corn of domain of the House of Ra'messe-miamūn of He-e-pwoid, under his authority, 110 sacks.
- 3, 9 Given to him on the river-bank of Dja'rūhe, being corn of this (?) domain; which had been in the ship of Seti, son of Psekhemnē, 5 sacks.
- 3, 10 Given to him in the island east of Dja'rūhe, on the threshing-floor of the cultivator Wennofrē, being corn of domain of the House of Amūn, domain of Khen-Min, by the hand of the controller 'Anerē, 100 sacks.

Figure 5 (continued)

- 3, 11 Given to him in the Island of Amūn Filler-of-Granaries, on the threshing-floor of the scribe Pmerit, being corn of domain of the House of Raṣmesse-miamūn of Ḥe-e-pwoid, under his authority, 10 sacks.
- 3, 12 TOTAL, given to him, 10 90 $\frac{1}{2}$ sacks. Rations of his crew, 42 sacks.
- 3, 13 SHIP OF the captain Khensemḥab, son of Neb'an, of the House of Amen-Rē, King of the Gods, under the authority of the Steward of Amūn:
- 3, 14 Given to him on the river-bank of . . . , on the threshing-floor of the controller [Pennēs]towē, being corn of regular domain of the House of Amūn, under his authority in the region of Tjebu, 40 $\frac{1}{2}$ 70 sacks.
- 3, 15
2(+ . . .) sacks. Balance, 31 $\frac{3}{4}$ 79 (+?).

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- 4, 1 Given to him in the Byre of Pḳal, on the threshing-floor of the cultivator Pentwēre, being corn of (this) domain, under his authority, 10 sacks.
- 4, 2 Given to him, being corn of domain of the House of Raṣmesse-miamūn of Ḥe-e-pwoid; which had been in the ship of the captain Seti, son of Psekhemnē, 28 sacks. Balance, 24.
- 4, 3 TOTAL, given to him, 28 310 sacks. Balance, 24 310. Rations of his crew, 51 sacks.
- 4, 4 SHIP OF the captain Psmennakhte, son of 'Ashafēnakhte, of this house, under his authority:
- 4, 5 Given to him in the Village of Medjed, on the threshing-floor of the retainer Amenḥotpe, being corn of domain of the House of Amūn, (founded) for (?) the people who were brought on account of their crimes, 95 $\frac{1}{2}$ sacks.
- 4, 6 Given to him in the Island of Amūn His -Spirit-is-in-Thebes, on the threshing-floor of the controller 'Ashafēheryeb, being corn of (this) domain, under his authority, 155 sacks.
- 4, 7 Given to him in the new island on the west of Khenemti, on the threshing-floor of the prophet of the House of Mehye-weben Ḥōri, being corn of domain which Pharaoh newly founded, 50 sacks.
- 4, 8 TOTAL given to him, 300 $\frac{1}{2}$ sacks. Rations of his crew, 38 sacks.
- 4, 9 SHIP OF Neb'an, son of Hadnakhtu, of this house, under his authority:
- 4, 10 Given to him in the *parē*-land of Ḥe-nūte, on the threshing-floor of the controller Sethiwenmaf, being corn of domain of the House of Raṣmesse-miamūn (founded) for (?) the people of the Sherden, 200 sacks. Domain which Pharaoh founded, 52 sacks.
- 4, 11 Given to him in [this place, on] this threshing-floor, being corn of domain of the House of Amūn which Pharaoh newly founded, 175 sacks.
- 4, 12 [Given to him] . . . [of corn of domain of the House of Amūn (founded) for the people who were brought on account of] their crimes, 71 + x sacks.

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- 5, 1 TOTAL, this expedition, 21 barges, making
- 5, 2 Corn of domain of the House of Amen-Rē, King of the Gods, which Pharaoh newly

Figure 5 (continued)

- founded, under the authority of the Steward Ra'messenakhte $100\frac{1}{2} 2170\frac{1}{2}\frac{1}{2}$ sacks. TOTAL, 2271 $\frac{1}{2}$. BALANCE, $100\frac{1}{2} 1870\frac{1}{2}\frac{1}{2}$.
- 5, 3 Corn of domain of the House of Amen-Rē, King of the Gods, which King Usima'rē-miamūn founded for (?) the people who were brought on account of their crimes, under his authority, 40 895 sacks, total, 935.
- 5, 4 Corn of domain of the House of Amen-Rē, King of the Gods, which King Usima'rē-miamūn founded for (?) the people of the Sherden and for the Royal scribes of the army, under his authority, 850 sacks.
- 5, 5 Corn of domain of the House of Ra'messe-miamūn in the House of Amūn of He-e-pwoid, under his authority, 220 $\frac{1}{2}$ 5432 $\frac{2}{3}\frac{1}{2}$ sacks. Total, 5653 $\frac{1}{2}$. Rations, 920 sacks.
- 5, 6 Corn of domain of the House of Ra'messe-Heḫ-Ōn, Maker of New Land (?), under his authority, 100 sacks.
- 5, 7 Corn of domain of the House of Setnakhte-merer-Amūn in the House of Amūn, under his authority, 522 $\frac{1}{2}\frac{1}{2}$ sacks.
- 5, 8 Corn of domain of the House of Seti-merenptah, in the House of Amūn, under his authority, 540 sacks.
- 5, 9 Corn of domain of the House of Amūn 'Ashafē in the Granary of the House of Amūn, under his authority, 830 sacks.
- 5, 10 Corn of domain of the House of Nofretiri in this house, under his authority 200 sacks.
- 5, 11 Corn of domain of the House of 'Aḥhotpe, [under] his authority 200 sacks.
- Some lines may be lost at the bottom of this, the last line of the recto.*

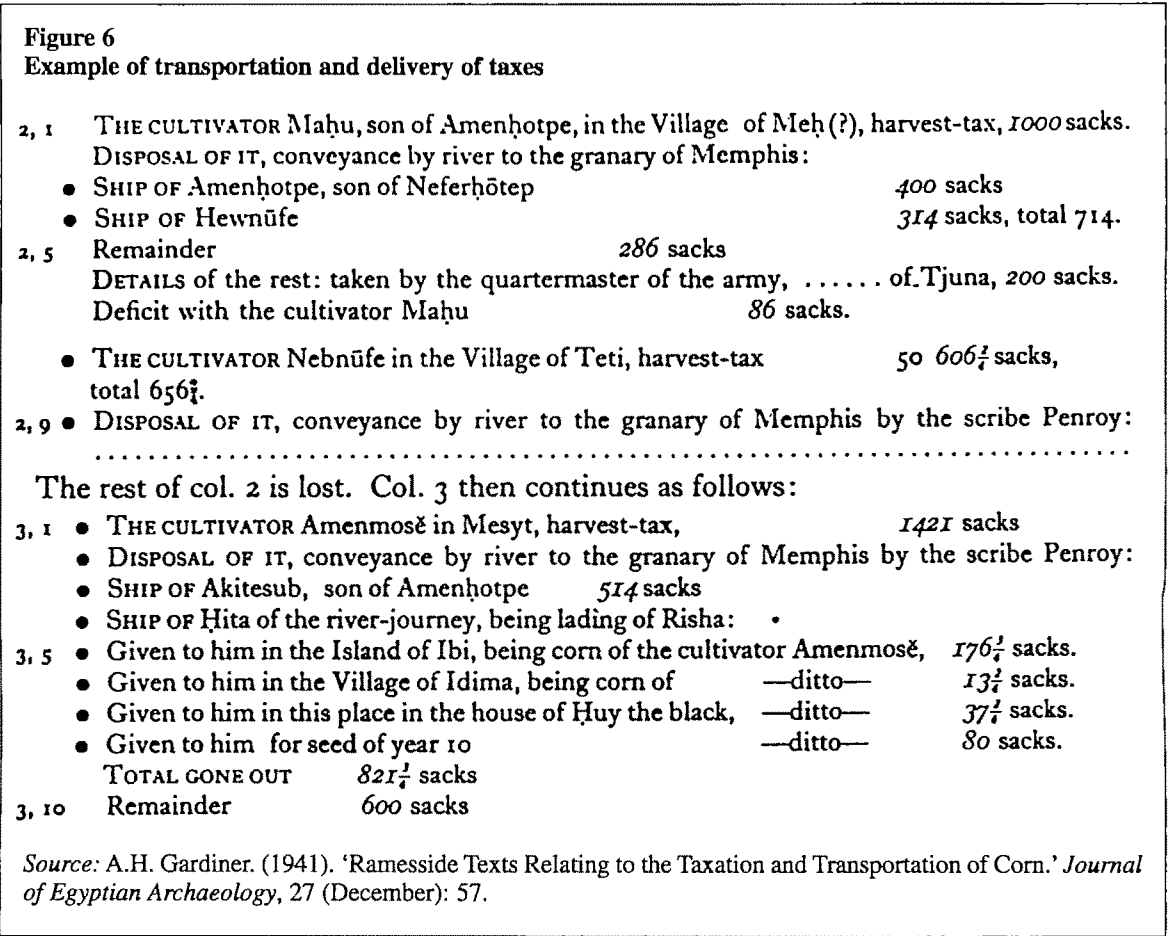
Source: A.H. Gardiner. (1941). 'Ramesside Texts Relating to the Taxation and Transportation of Corn.' *Journal of Egyptian Archaeology*, 27 (December): 38–41.

900 sacks of corn.⁹ The entries show names of the captains of individual ships, location of the threshing-floor from which the corn was collected, name and title of the owner in question and name of the institution for whom the corn was collected. Thereafter, the scribe listed the precise amounts of tax collected, both in detail and in aggregate, the balance remaining, and, at the end of each section, the total load of the ship, and the amounts permitted, in the form of rations, for consumption by the crew.

Papyrus Louvre 3171 (Gardiner, 1941) from the Eighteenth Dynasty (1529–1305 BC) provides a more complete example of the transportation and delivery of tax (Figure 6). The early part of page 2 details the harvest-tax liability of the cultivator Maḥu as being equal to 1000 sacks. This liability is then accounted for in terms of sacks to be sent by river to the granary of Memphis: 400 sacks by the ship of Amenhotpe plus 314 sacks by the ship of

Hewnūfe. Further, 200 sacks were reported to have been taken by the quartermaster of the army leaving a deficit of 86 sacks. The scribe therefore fully accounts for the total harvest–tax liability of 1000 sacks. The entries on page 3 are likewise easy to reconcile. The cultivator Amenmosē has a harvest-tax liability of 1,421 sacks. This is accounted for by: 514 sacks sent by the ship of Akitesub plus four different quantities totalling 307 $\frac{1}{4}$ sacks sent via the ship of Hita from different locations, giving an aggregate of 821 $\frac{1}{4}$ sacks sent and leaving a remainder of 600 sacks (should be 599 $\frac{1}{4}$). All the elements required to assign accountability to the tax subject are meticulously observed in these documents: designations of the individuals responsible for tax liability by name, title, and the precise location of their threshing floors; the amount of tax due; quantities of objects paid out by the taxable subjects and to whom; and the remaining balance. Given these details it would have been possible for a cultivator to demonstrate the extent to which he has met his tax obligations, and for the tax scribes to track down those who did not pay their tax liability in full. Further, accountability could be extended to other parties employed in the cycle of taxation; the ship captains or skippers who transported the tax, each being held responsible for the difference between his ship's load and the rations

⁹ Gardiner (1941: 47) estimates that 900 sacks (or *khar*) of corn would have weighed 42 tons and occupied a space of about 2,313 of cubic feet. The large size of these ships seems to have been reflected in the titles held by individuals in charge of them. In contrast to the title of skipper mentioned in Papyrus Turin discussed earlier, where the boats were much smaller in size, here we have more grand titles such as captain and commander.



permitted for his crew, the store or granary keepers for the amounts they received, and the scribes of the accounts for ensuring regular and correct book-keeping. A whole chain of accountabilities would have cascaded throughout the different layers of the administrative hierarchy. Despite this, this ancient accountability system was not completely immune to human indiscretion.

Papyrus Turin 1887 is the most detailed record we have from the New Kingdom on an ongoing scandal concerning the misappropriation of temple revenues that lasted for several years involving the priest of Khnūm in Elephantine, and a number of accomplices (Figure 7). The text states from the outset that an annual delivery of 700 sacks of corn was to be transported by ship to the granary of the temple of Khnūm. Everything seems to have run smoothly until year 28 of the reign of King Usima'fe, when the ship's captain fell ill and then died. A new captain was appointed by the priest of Khnūm and trouble ensued almost immediately as 140 *deben* of gold were not delivered to the treasury and corn deliveries to the temple granary were much less than expected.

The Papyrus lists shortages in corn deliveries for nine years. For each year, the scribe noted the amount of corn delivered, and the deficit, and when no corn was delivered at all in any one year, the scribe indicated the number of sacks expected to be delivered and then stated that 'he brought none of it to the granary', implying that the deficit for the year is the full 700 sacks. In three years, no corn at all was delivered to the temple granary, and in the remaining six years only small amounts of corn were delivered. The aggregate tax liability for the nine years was 6,300 sacks of corn (700 X 9), of which only 576 sacks were delivered, leaving a remainder of 5,724 sacks undelivered. The text indicates that the deficit was 5,004 sacks, and that the ship's captain, the scribes, controllers and cultivators of the House of Khnūm 'made defalcations with it, and they used it for their own purpose'.¹⁰ The Papyrus also records more charges concerning the corruption of officials. A charge is made against someone who opened the granary under the seal of the controllers and stole 180

¹⁰ Given that the total deficit I calculated is 5,724, the figure of 5,004 leaves 720 sacks to account for. It is possible that this amount represented a genuine balance to be delivered later rather than being used by the culprits for their own purposes. Alternatively, this amount may be included in the 1,000 sacks referred to at the end of the Papyrus as follows: 1,000 sacks less 100 exacted in year 4 of Pharaoh gives 900 sacks, less 180 sacks stolen gives 720 sacks.

Figure 7
Example of tax misappropriation

- vs. 1, 7 [Charge concerning the fact that King Usima'rē-miamūn], the Great God, cultivator[s] seed so as to cause them to [bring?] 700 sacks of corn to Khnūm, Lord of Elephantine, here in the Southern province, and they used to be conveyed by water
- 1, 8 Elephantine. He (?) conveyed them by water and [delivered] them in full in the granary of the god, and they were received from him
- vs. 1, 9 every year. Now in the year 28 of [Usima'rē-miamūn, the Great God, sickness befell?] this ship's captain and he died. And, who was prophet of the House of Khnūm,
- 1, 10 brought the merchant and . . . Khnemnakhte and appointed him [ship's captain] corn there in the Northern province, and he started conveying it by water. But in year 1 of King Hekma'rē-setpenamūn, the Great God, he made many defalcations with the
- 1, 11 corn. And this ship's captain¹ 140 *deben* of the treasury(?) of Khnūm, and so (?) the gold was not in the treasury of the House of Khnūm. And as for his (?) defalcations with the corn, it is not in the granary of Khnūm, he having taken¹
- 1, 12 [it] Khnūm.
- 1, 13 [Year 1 of King Hekma'rē-setpenamūn, the Great God, there ca]me to Elephantine by the hand of the ship's captain 100 sacks. Deficit, 600.
- vs. 2, 1 Year 2 of King Hekma'rē-setpenamūn, the Great God, 130 sacks. Deficit, 570.
- 2, 2 Year 3 of King Hekma'rē-setpenamūn, the Great God, 700 sacks; he brought none of it to the granary.
- 2, 3 Year 4 of King Hekma'rē-setpenamūn, the Great God, 700 sacks. There came in the ship of the Sacred Staff by the hand of the skipper Pnakhta 20 sacks. Deficit, 680.
- 2, 4 Year 5 of King Hekma'rē-setpenamūn, the Great God, 700 sacks. There came for the offerings of the Sacred Staves of Khnūm 20 sacks. Deficit, 680.
- 2, 5 Year 6 of King Hekma'rē-setpenamūn, the Great God, 700 sacks. He did not bring it.
- 2, 6 Year 1 of Pharaoh, 700 sacks. He did not bring it.
- 2, 7 Year 2 of Pharaoh, 700 sacks. There came by the hand of the ship's captain Khnemnakhte 186 sacks. Deficit, 514.
- 2, 8 Year 3 of Pharaoh, 700 sacks. There came by the hand of this ship's captain 120 sacks. Deficit, 580.
- 2, 9 TOTAL, corn of the House of Khnūm, Lord of Elephantine, in respect to which this
- 2, 11 ship's captain combined with the scribes, controllers, and cultivators¹ of the House of Khnūm and made defalcations with it, and they used it for their own purposes, 5004 sacks.
- vs. 1, 4 [Charge concerning] their having opened one garner¹ of the House of Khnūm which was under the seal of the controllers of the granary who do the controlling (*rwḏ*) for the House of Khnūm, and they stole 180 sacks of corn from it.
- vs. 2, 12 Charge concerning this ship's captain of the House of Khnūm having exacted produce
- vs. 2, 13 to the value of 50 sacks, Rōme, son of Pen'anūke, and to the value of 50 sacks, ¹ Pwakhḏ, son of Ptjēumyeb, total 2 (persons), making 100 sacks, from year 1 of King Hekma'rē-
- vs. 2, 14 setpenamūn, the Great God, to ¹ year 4 of Pharaoh, making 1000 sacks. He used it for his own purposes and brought none of it to the granary of Khnūm.

Source: A.H. Gardiner. (1941). 'Ramesside Texts Relating to the Taxation and Transportation of Corn.' *Journal of Egyptian Archaeology*, 27 (December): 57.

sacks of corn. Thereafter, another charge is made against the ship's captain for unjustifiably exacting 1,000 sacks of corn from two individuals over a number of years to use for his own purposes.

There are a number of important observations to be made here. First, it is clear from the Papyrus that an annual tax/impost was levied and expected to be delivered to the temple granary every year. This suggests that tax assessment was not only an ad hoc arrangement to be determined only when an occasional need arose, but was also a regular revenue generating process for the temple. Secondly, the annual tax liability was fixed at 700 sacks of corn per year, presumably the annual requirements of the temple, rather than allowing the burden to vary with fluctuations in the Nile level or in the crop due to other exogenous forces. This seems to be at odds with 'usual' practice whereby the tax burden related to productivity and size of land (see Figure 3). Thirdly, given the use of an accountability system, for corruption to persist on such a major scale and over nine years required a collective conspiracy of a number of influential officials rather than simply the involvement of one person. For example, in the entries made on the *recto*, the text mentions the temple priest, the ship's captain, and groups (of unidentified numbers) of scribes, controllers, and cultivators. The implications of all this are manifold. A carefully designed and crafted system of control and accountability may be deemed essential as a key and defining element of any monitoring system. However, large misappropriation of resources belonging to the temple, the treasury, and private individuals occurred. But then, thanks to such detailed recording of the precise amounts misappropriated and the names of individuals involved in the defalcations that it was possible to charge them for their misdemeanours. Without these accounting practices, it may have been impossible to pinpoint responsibility for what happened, or to quantify precisely the amount of deficit.

6. Is there justice in the land? The scope for tax appeals and the power of the scribes

As a measure of observing *Maat*, edicts and laws promoted fairness of tax assessment. Taxable subjects and tax officials were discouraged from fraudulent activities through the threat of brutal punitive measures. Yet, there were always those who were intent on breaking this code of behaviour. The Instruction of Amenemope, a literary text dating to the New Kingdom (Lichtheim, 1976: 151; 156–157) reinforces the essence of *Maat*:

'Do not move the markers on the borders of fields. Nor shift the position of the measuring-cord... Do not move the scales nor alter the

weights, Nor diminish the fractions of the measure; Do not desire a measure of the fields, Nor neglect those of the treasury... Do not make for yourself deficient weights,... beware of disguising the measure, So as to falsify its fractions; Do not force it to overflow; Nor let its belly be empty. Measure according to its true size, Your hand clearing exactly.'

The above Instruction stipulates that markers of field borders had to be precise, those using weights had to be exact, and agreed measures, such as those of the treasury should be used. Such were the exhortations of *Maat*; to be fair to oneself, to the state, and to others. Similarly, the edict of Horemhab, Nineteenth Dynasty, 1303–1214 BC, (Breasted, 1906/1988, Part Three: 27) sought to protect taxable subjects against the possible indiscretion of tax officials, whereby the king declares: '[my majesty commands that if any officer is guilty of extortions or theft], the law [shall be executed] against him, in that his nose shall be cut off, and (he) shall be sent to Tharu.' Similar measures were threatened against fraudulent tax officials who kept part of the tax to themselves: 'If there be any place [where the stewards shall be tax collecting and any one] shall hear, saying: "They are tax-collecting, to take the katha-plant [for themselves]"... it shall be done likewise against them' (p. 27). The edict also treated under-taxation as being equally fraudulent as over-taxation. The king warns that in the case of tax officials 'requisitioning grain from the citizenry with the estate *oipe* measure of 50 *hin* while they undervalue what is required... My person had commanded that one should turn away [from them] entirely to prevent [them from further injuring] private individuals by fraud.' (Murnane, 1995: 238, emphases in original):

I do not wish to overstate the value of this code of behaviour, nor to suggest that it was more effective in preventing abuse and fraud any more than modern law. However, it would be surprising if it did not contribute to an aspired sense of justice (as a key part of the concept of *Maat*). Knowledge of such code of behaviour may have encouraged individuals who felt hard done by tax assessments to complain officially about their plight. One example contesting tax liability is a correspondence sent from Meron, the mayor of Elephantine, to the chief-taxing master (during the reign of Ramesses XI, 1110–1080 BC, Wente, 1990: 131):

'The scribe of Patjauemdiamon of the House of the Votaress of Amon has come. He arrived in Elephantine in order to demand that grain that has been specified for the House of the Votaress of Amon, and he said to me, "Hand over 100 *khar*-measures of barley", so he said to me even though there are no field holdings yielding such

an amount. He said to me, "It is because of a holding of *khanto*-land¹¹ of the *gezira* of Ombi (Kom Ombo) that they are being demanded of you", so I was told, although I had cultivated no holding of *khanto*-land on the *gezira* of Ombi. By Amon and by the Ruler, l.p.h.,¹² if it be ascertained that I have cultivated a holding of *khanto*-land on the *gezira* of Ombi, it is from me that this barley shall be exacted. It is merely a holding of some free tenants, who pay gold into the Pharaoh's treasury, that those free tenants have cultivated, they regularly handing its gold over to Pharaoh's treasury, whereas I had nothing to do with a holding there.'

Even an official as important as a mayor felt that he was faced with an unfair tax assessment. Perhaps because of his high rank, compared to a poor citizen such as a land labourer, he was able to challenge the 'offending' scribe by complaining to the chief-taxing master. The intentions of the mayor seem to have been two-fold: first, to revoke what he considered an unjust tax burden on the produce of a land that he claims he had nothing to do with, and secondly, as an official of the state, to clear his name and assert his integrity as an honest man. We do not know how the mayor's pleas were received by the chief-taxing master, but at the very least the mayor felt he could lodge his complaint formally. One letter dating from the Twentieth Dynasty, 1193–1080 BC, (Wente, 1990: 174–175) offers insights into a potentially different example of counter claims over tax when capacity measures, rather than more precisely denominated monies of account, were used to measure tax collected. The correspondence was sent from Henuttowy, the chantress of Amon-Re, to Nesamenope, the necropolis scribe, stating (p. 174):

'As for the mention you made of the matter of those 162.5 *khar*-measures of emmer about which you said, "Let the scribe Pentahunakhte go and receive them together with the captains, but they should not draw them out by means of a large *oipe*-measure", as you said, your letter reached the palace where the vizier is, and he dispatched the scribe Saroy together with the measurer. He caused them to come bringing an *oipe*-measure that was one *hin*-measure greater than the granary's *oipe*-measure. I went my own self and caused the grain to be received while I was there. It amounted to 146.75 *khar*-measures by this *oipe*-measure. This native of the necropolis and the fisherman said, "It is 150 *khar*-measures of grain that we measured out for you with the *oipe*-measure of the granary of the Estate of Amon", so they said. I checked out the

oipe-measure and told them, "I am satisfied with the check. I shall find the grain wherever it is", so I said to them.'

In this text, the tax liability may have been determined correctly with the debate focusing on what capacity measure was used to assess the crop. The scribe measuring the tax collected appears to have used a measure of a capacity larger by one *oipe* than the officially authorised measure in the granary of the Estate of Amon. Given that one *khar* = 40 *hin*, the incorrect measure used had a capacity of 41 *hin*, or was 2.5% greater than it should have been. The amount of grain delivered can be corrected to: $146.75 \times 102.5\% = 150.4 \text{ khar}$, a figure much closer to the 150 *khar* claimed to have been delivered.

What is particularly striking about the above examples is the power of the scribe. Complaints were made against tax scribes who, just as we observe throughout history down to present times, wielded considerable power over taxable subjects. To be able to challenge their calculations, a taxable subject had to be well connected, and either be literate and numerate in tax matters or could afford to hire the services of a scribe. That only a small subsection of society was in a position to contest tax claims, leaving the majority of the population powerless in the face of tax officials, can be gleaned from various literary source (e.g. Papyrus Anastasi V, Caminos (1954); Papyrus Pushkin 127, Caminos (1977). These texts suggest that the tax burden was heaviest on the lower classes of society, as were the punishments, meted out to those who failed to pay. Gardiner (1941: 20) has noted that such brutality was experienced by the poor and powerless throughout ancient Egyptian history, and it tended to be exercised on the spot where the crop was located by 'powerful' assistants or door-keepers who accompanied the taxing scribe. Such oppressive practices are a far cry from the ideal of Maat, with its emphasis upon truth, justice and righteousness. They are a manifestation of the schism that existed between the ideal and the real in ancient Egyptian society.

7. Conclusions and implications: accounting for tax

Much of Egypt's economy was based on redistribution whereby resources were collected for the centre (the king's administrative apparatus) only to be paid as wages/rations to state employees or as expenditures. For the state to secure the aspired social, economic and administrative infrastructure, it relied on its subjects, both native and conquered, to fill its coffers with revenues, hence the importance of taxation. The purpose of this paper was to examine the role of accounting practices used in the cycle of taxation, beginning with identifying

¹¹ *Khanto*-land is the same as *khato*-land.

¹² L.p.h. stands for 'may he live, be prosperous, and happy'.

taxable subjects, through the estimation, assessment and collection of taxes, to their transportation, delivery and storage. I have stressed earlier that extreme care should be exercised when employing modern terminology to ancient practices such as those of ancient Egypt. Hence, my use of the modern term 'taxes' is certainly problematical. I have alluded to various ancient Egyptian words used in the texts I examined here, such as impost, harvest-tax, dues, and so on. Whether one or some of these words matches exactly the modern term 'taxes' is never clear-cut.

In commenting upon accounts drawn from remote historical eras, such as those examined in this paper, one becomes inevitably concerned with their meaning as well as their social and economic significance. Such accounts are tantalising, and they may be noted more for what they fail to reveal than for what they disclose. That such ancient accounts leave many questions unanswered can be demonstrated by reference to the defalcation case discussed above (Figure 7). For example, why was the shortfall in deliveries not discovered for nine years? What were the social and official backgrounds of the scribes who colluded in the defalcation? Were they the same scribes responsible for keeping the accounts? What was the precise purpose of the Papyrus containing the accounts? How did the temple make up for the significant shortfall in its revenues for nine years if these revenues were earmarked for providing rations for its employees? Answers to these, and similar, questions would allow a more informed understanding of the activities covered by these accounts. Yet, unfortunately they cannot be addressed in any meaningful way for at least two reasons.

First, in some cases, as noted in Figure 4, it is impossible to reconcile the numbers fully. This could be caused by: (a) damage to the original records; (b) uncertainty in reading some handwritten documents (see Ezzamel, 2002); and (c) errors of omission or commission committed by the ancient scribes, either deliberately or unwittingly. Secondly, because only a small fraction of ancient Egyptian records on papyri has survived, and records that have survived are damaged, much of the context relating to the accounts has been lost. Hence, it is impossible in many cases to state unequivocally the intended purpose of the document or the social background of the individuals associated with it. Sometimes quantum leaps in reasoning have to be undertaken, and hence, at least *some* of the commentary has to be viewed as tentative.

Against these limitations, there are important assurances. First, the accounts exhibit a strong measure of internal integrity in that there is an inherent logic to the way the entries are recorded, and in general the entries can be interpreted in an eco-

nomically meaningful manner. Secondly, the absence of many of the contextual details of the accounts can be compensated for by an appreciation of the overall context of the civilisation of ancient Egypt over its long history. This demands much time investment (in the case of this writer 15 years), but it also should render the argument more than a plausible interpretation. Naturally, this still leaves the door wide open for future scholars to provide radically different insights, and indeed different histories, but this is one of the fascinations of working with such 'imperfect' records.

In this spirit, I argue that the accounting practices used in the various texts I examined in this paper attest to the presence of a number of key characteristics that collectively formed the basis of an ancient system of human accountability: temporal specification; spatial designation; personal identification; and object naming, differentiation, enumeration and valuation. Tax was first estimated before cultivation, and later assessed as a final tax liability once the produce or crop was ready. When the final tax assessment was made, the documents stated clearly the precise date, in terms of day, month and year of the reign of the relevant sovereign, the location of tax assessment/collection, the amounts of tax liability due for collection; the amounts collected and the remainder, if any, and the final destination and location to which the tax collected was to be delivered. Names of all individuals concerned were noted, in particular the taxable subject, the scribe making the tax assessment, the scribe who collected the tax, the individuals responsible for the transportation of the taxes, and finally the individuals to whom taxes were delivered for final storage. This accounting system traced accountability down to every individual responsible for a particular stage in the cycle of taxation. Each of the individuals named as being responsible for any of these stages was in a position to account fully for his responsibilities.

Each document also named, differentiated, itemised and counted the objects collected as taxes. For example, gold and corn were each named, itemised, and enumerated and hence differentiated clearly. Also, objects were valued extrinsically. Thus, a money of account, such as the *deben*, was used in some cases as a common denominator against which the relative values of different objects could be assessed, thereby making possible an extrinsic valuation of, for example, corn against gold. In other cases, a variety of monies of account were used within the same document, for example *deben* for metals, *khar* or *oipe* for grain, and boxes/length for linen. But even though within the text itself it is not directly possible to construct a valuation that allows value comparability across such different objects, it is still possible to do so by going outside the text because

the monies of account used in ancient Egypt could be inter-translated into one common denominator.¹³

Despite this system of accountability, misappropriation of state and temple resources occurred, sometimes on a significant scale. I have three observations to make in this connection. First, no system of accountability can ever be a full guarantee against dishonesty and opportunistic behaviour, although one would expect a carefully designed system to minimise the potential and frequency of such behaviour and this was true of the ancient past as it is of today. Second, it took a full conspiracy involving numerous groups of very high officials to beat the system, and, paradoxical as this may seem, for such a large conspiracy to be thought necessary gives some indication of the effectiveness of the system of accountability used. Third, without this ancient accountability system, the nature of collusive behaviour and the extent of loss in tax revenues may have not been discovered, and/or quantified. In this particular case, and because the scribes noted everything in detail, the individuals responsible for collusive behaviour were brought to justice.

These comments lead to a more general issue, that of the relationship between accounting and the state. First, to the extent that the economy of the New Kingdom was structured around redistribution, it is almost impossible to envisage how such an economy could have functioned without the intervention of accounting. Available records attest to the important role of administration in this connection at least from unification and extending throughout Egyptian dynastic history. A marked development in administration, in terms of overall organisation, sophistication, and level of intervention has been noted during the Middle Kingdom (Quirke, 1990). This powerful administrative machinery continued during the New Kingdom, but given the discontinuities and lacunae in available documents it is impossible to ascertain with certainty the extent to which the conquests of the New Kingdom contributed to the further development of administration. Having said that, it remains a distinct possibility that the need for a more effective system of tax assessment and collection has been exacerbated further, rather than being totally determined, by the frequent military conquests required to initially acquire and subsequently maintain the large empire of the New Kingdom.

To the extent that this statement holds, it would be consistent with the more recent history of taxation in late 17th century England whereby tax practices and organisation witnessed a radical development to cover the financial demands of esca-

lating war (Brewer, 1989). Accounting calculations made it possible for state institutions, e.g. the palace or the temples, to be fully provided for. If the evidence examined in this paper is anything to go by, it would seem that, with the exception of the defalcation case discussed earlier, these institutions had a steady flow of tax revenues over time. Whether this was because the periods covered by the material I have examined were of relative economic stability can not be fully attested from the texts. However, it would be difficult to imagine that the flow of resources to state institutions remained the same in periods of serious crop shortages caused by inappropriate inundation levels, for in these situations other crisis measures may have been invoked. The evidence from the Wilbour Papyrus (Gardiner, 1948) indicates that the extent of land fertility had a direct impact on the level of tax (yield) assessment, thereby pointing to the strong possibility that some measure of taxable capacity was taken into account.

Second, the dependence of the state upon accounting expertise at the various stages of the cycle of taxation created the scope for a complex web of power relations to ensue. It was by virtue of official titles being conferred by the state upon specific individuals that these officials could exercise their accounting expertise, so in the first instance they owed much of their influence to the state. Once authorised as technical experts with a responsibility to act on behalf of the state, the task of these officials was now to construct the wealth of taxable subjects so that tax liability could be determined. In so doing, they were inextricably linking the population to the state in a network of dependencies. For the population expected not only political stability and protection but also other important services from the state, such as monitoring and controlling the Nile levels, and in return the state demanded resources to support its activities. But given the centrality of the concept of *Maat* to the lives of the ancient Egyptians, the tax scribes were expected to ensure fairness at two levels: to taxable subjects and to the state. Taxable subjects would have expected the scribes to be fair in assessing their tax burdens and to use the correct measures when collecting taxes. Equally, the state expected the scribes to ensure that the appropriate level of tax revenue was levied, collected, and transported to state storehouses. Fair taxes were construed by the state as a fair burden for the subjects, even though the subjects themselves may have viewed the tax burden to be excessive and unbearable (Caminos, 1977). From the perspective of the state, ensuring that the appropriate levels of taxes were collected was deemed essential for the preservation of the state, and the maintaining of existing social, political and economic order.

Whenever tax burdens were perceived to be op-

¹³ For example, in the New Kingdom 1 *snw* = 5 *deben*; 1 *hin* = 1 *deben*; 1 *khar* = 2 *deben* (see Janssen, 1975a).

pressive, the scribes were seen by the population as an extension of the brutal power of the state, taking from the weak and providing for the strong (see Caminos, 1977). Further, the scribes were in a position to misappropriate resources for their own benefit and the consequences of such actions were felt by taxable subjects. Those ordinary citizens who were in a relatively strong position could challenge unfair tax assessments and ultimately complain to higher officials. But for the underprivileged or illiterate majority, they may have had little opportunity to seek justice. The power of the tax scribe over taxable subjects is not simply a manifestation of contemporary times but has its genesis in the dawn of civilisation.

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Accounting professionals and the accounting profession: linking conduct and context

Fiona Anderson-Gough, Christopher Grey and Keith Robson*

Abstract—Recent years have seen an upsurge in published research concerned with the daily conduct of accounting professionals in Big Five firms. However, in general, these studies have given scant consideration to the institutional setting within which accountants work. In this paper we analyse the UK accounting profession in terms of the fragmentation of its professional bodies and the diversification of its markets, and link this to empirical findings from a detailed qualitative research project examining the professional socialisation of trainees in the UK regional offices of two Big Five firms. These findings confirm earlier studies in terms of the key relationship between professionalism and forms of self-conduct, but extend the earlier studies by exploring trainees' accounts of their professional expertise, qualification and examination. We conclude by arguing that these conceptions reinforce, albeit in unintended ways, the changing institutional context of the accounting profession.

1. Introduction

The professions play a central role in the economies and societies of the modern world, and, as such, have commanded considerable academic attention. One of the central issues in the functioning and maintenance of any profession is the way in which individuals are 'made' into professionals. The nature of this process will have important implications for the ability of a profession to attract clients as well as to establish its wider position in society.

There exists a large and well-established body of research which has shown that the process of becoming a professional involves much more than simply passing examinations and being registered to practice (Dingwall and Lewis, 1983; Abbott, 1988). Rather, becoming a professional is a complex *accomplishment* which involves induction into a wide array of formal and informal norms which have to be both taught and learned, whether consciously or not. This process is one of *socialisation*.

As little as 10 years ago, however, there were

surprisingly few research studies dealing with the daily life of accountants in the major public practices. When compared with professions such as medicine and law, accounting has, until recently, been 'the most under-researched organisation-based profession to emerge as a direct consequence of commercial enterprise' (Dirsmith et al., 1997: 5). More specifically, socialisation processes in accounting firms have been described as 'poorly understood' (Fogarty 1992: 142). There are undoubtedly many reasons for this. The study of the professions has been, to a large extent, the preserve of sociologists and, as Hanlon (1994 p.82) notes, 'sociology has never been enthusiastic in its examination of the work of accountants'. Certainly within the sociology of the professions, medicine and law (cf. Freidson, 1970, 1986; Atkinson, 1981; Rueschemeyer, 1986) have attracted far more interest than accounting, perhaps because of their longer history, possibly because of their greater social prestige. The relative lack of attention given to the accounting profession, however, can only partly be explained in terms of the preferences of scholars: also important have been problems of research access associated with an occupation in which competition is fierce, and secrecy is seen by accounting firms as a competitive weapon.¹

Whereas 10 years ago there were less than a handful of qualitative and ethnographic studies of accountants (Dirsmith and Covalenski, 1985;

*The authors are, respectively, at Warwick University, Cambridge University and UMIST, Manchester. An earlier draft of this paper was presented at the 21st Annual Congress of the European Accounting Association, Antwerp, April 6-8, 1998 and the Conference on Professional Service Firms: Knowledge and Expertise, University of Alberta, Edmonton, September 25-27, 1999. The financial support of the Institute of Chartered Accountants of England and Wales (ICAEW) is gratefully acknowledged. Correspondence should be addressed to Professor Robson at the School of Management, UMIST, P.O.Box 88, Manchester, M60 1QD, UK. E-mail: Keith.Robson@umist.ac.uk

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¹ Research access is a crucial issue in that the empirical study of professions and professional socialisation typically entails some form of qualitative methodology, because much of the detail of socialisation lies in informal and tacit processes and knowledge.

Harper, 1988, 1989), the present decade has seen something of a proliferation of such work (e.g., Anderson-Gough, Grey and Robson, 1998a, 1998b, 2000; Coffey, 1993, 1994; Covaleski et al., 1988; Dirsmith et al., 1997; Grey, 1994, 1998; Hanlon, 1994; Power, 1991). We now know a great deal more about how accountants live their daily lives and 'enact' professionalism, at least in large public practice firms.² While this knowledge cannot be summarised in detail here, it would be fair to say that most of the studies cited bear out the claim that:

'Great care is taken to get the right work performed, in the right way, by the right people, wearing the right clothes. Of such stuff is the garment of professionalism made: and such is the display of knowledge and trustworthiness that justifies monopoly' (Macdonald, 1995: 207).

And this latter quotation should alert us to something which is, in the main, absent from recent research on accounting practices: issues of conduct, appearance and the socialisation processes through which these are developed are by no means separate from wider considerations of the nature and status of accounting *qua* profession, and the markets within which it operates (Robson et al., 1994). Conduct in accounting firms, as the subtitle of this paper suggests, is linked to the context of the accountancy profession. But how? This is the question that this paper seeks to answer.

The paper is organised as follows. In the next section we review relevant literature that has examined the conduct of accounting professionals and set out our problematic for this paper: the linkages between professional conduct and context. Section 3, 'Context', details some of the key institutional features of the accountancy profession in the UK. This is followed by Section 4, 'Conduct', giving an overview of the authors' research on the socialisation of accounting professionals in two Big Five firms in the UK. In Section 5 we discuss the connections between the institutional context of accounting and the conduct of accounting trainees. This is followed by a conclusion.

2. Conduct and context

The literature on professions has long-recognised the interdependence of the production and reproduction of a profession with the enactment of particular behaviours. In Dingwall (1979), for ex-

ample, learning the 'correct' behaviours and norms is seen to be crucial in presenting the correct image to clients and other professionals: a professional has to know how to convey the impression that their service and its practitioners are 'special', allowing people outside the profession to place the practitioner within that special group and themselves outside of the group.³

At one level this seems self-evident: a professional must behave professionally. Yet clearly, there are some complex processes at work. There is no *necessary* connection between appearance and the performance of work tasks. Wearing a wig and gown does not make a lawyer a better lawyer, for example. Nor does a smart appearance denote medical competence. Indeed, it has become commonplace for doctors, especially in emergency functions, to affect a kind of calculated scruffiness in sharp contrast to the traditional three-piece suit image of the hospital consultant: there is no reason to presume that they are worse doctors as a result. The notion that smartness is linked to trustworthiness is one of the more brittle of social constructions.

Of course, there is more at stake in professional conduct than smartness of dress: a whole range of ways of self-conduct including timekeeping (Coffey, 1994), ways of speaking and presenting (Harper, 1989), and even the manner of handshaking and signing one's name (Coffey, 1993) are relevant. Studies of trainee accountants in the process of learning these conventions suggest that such professional conduct is conducted in the name of client demands and that the client discourse is a significant factor in the organisational control of these firms (Anderson-Gough, Grey and Robson, 2000). At one level the implication is that professional conduct is a competitive weapon through which firms attempt to retain or obtain custom. However, 'the client' is also a potent organisational discourse through which the standards of professionalism are conveyed and so appropriate behaviour is concerned not just with competition *between* firms for competitive advantage but also with the mutual construction *among* firms of professional solidarity. For, in the words of one of the most eminent analysts of professions:

'A critical but often ignored method of sustaining the solidarity of the profession lies in the norms governing relations among its members and lay people. They may be written as rules or practised as unwritten custom' (Freidson, 1994: 203).

The generation of professional solidarity is central to the notion of a 'professionalisation project' (Larson, 1977) since:

'... maintaining sufficient cohesion of the profession as a whole [allows it] to be able to under-

² There has been very little empirical study of smaller firms or of accountants in industrial settings.

³ Thus: "The accomplishment of health visiting as a 'profession' involves its members in being certain kinds of people who carry out tasks in particular ways within a particular work setting" (Dingwall, 1979: 340).

take common action ... to sustain its status and privilege...' (Freidson, 1994: 202)

Accounting has long sought to engage in such a project of professional solidarity. As Macdonald (1995) has argued, 19th century accountants, as their profession began to be established, emphasised its status as a 'gentlemanly' rather than a commercial occupation, and sought a reputation for trustworthiness on this basis. Although accountancy firms are now much less shy of projecting a commercialised image (Hanlon, 1994), the continuing preoccupation with self-presentation would seem to be the lineal descendant of this concern with gentlemanliness. Moreover, the establishment of a degree of commonly shared modes of conduct across the profession offers the potential for both a homogenous external profile, and for shared norms and communication within the profession. As Kanter (1977) has noted, a degree of 'homosociality' in terms of background and experience is a way in which trust and shared assumptions can coexist with a growth in scale and complexity. If people share membership of a particular social grouping, or experience of a particular set of socialising process, they will have a common vocabulary and meaning structure to mediate relations which may be anonymous or discontinuous (Garsten and Grey, 1998).

In accordance with the studies of accountants referred to earlier, accountants remain highly preoccupied with issues of professional conduct and appearance. We have suggested that this might be linked to the promotion of professional status and solidarity. But there are more precise issues at stake here. The problem with some recent work on accountants that we seek to address here is that it neglects connections to the institutional context of the profession, having very little to say about the accounting profession itself. This is perhaps an inevitable weakness of the 'symbolic interactionist' tradition (Becker et al., 1961), which, since it treats professionals as no different in kind from any other social group, is led towards what one might call a 'micro-focus' upon the internal processes of group and identity formation.

While we certainly recognise the value of this type of work, especially given the lack of research in the accountancy area, in this paper we wish to extend it by showing that these kinds of professional actions and behaviour do not occur in an institutional vacuum; rather the practices, norms and beliefs of accounting professional are both a medium and outcome of their institutional configuration.⁴ This preoccupation with the 'person' of the

accounting professional is more than a legacy of the historical search for gentlemanly status or the attempt of organisations to promote an externally impressive image. Rather it is, at the least, contextualised by and, at the most, helps to generate a series of developments within the accounting profession more generally. Our aim in this paper is to move towards an elaboration of the relays and linkages that exist between the manner in which accounting trainees are socialised and acculturated in their firms, and how the institutions of the accountancy profession in the UK are produced and re-produced. To this end in the next section we move on to consider the institutional context of accountancy in the UK.

3. Context: institutional fragmentation and diversification

The accounting profession is changing so rapidly that any summary of current issues is liable to be dated by the time it appears in print. In particular, the last few years have seen frenzied increases in market concentration with the Big Eight becoming the Big Six, becoming the Big Five. However, these changes do not affect (or, rather, are but an aspect of) more general themes in the recent history of the profession which have an obvious bearing upon its status as a profession. These themes, which we discuss in this section, are the institutional fragmentation of professional bodies, the diversification of the profession's activities and the nature of its organisational forms (in particular, the dominance of the Big Five firms), and the consequences flowing from this diversification.

3.1. The fragmented profession

The existence of six professional accountancy bodies within the UK, each offering training and examination procedures leading to the qualification 'accountant', is revealing of several tensions in the professional identity of accounting and accountants. Historically, there have been periods of substantial merger activity among the professional institutes, most notably, although not exclusively, in the consolidation of various regional bodies in the 1880s to form the Institute of Chartered Accountants of England and Wales (ICAEW) (Matthews et al., 1998: 284–285). However, although several attempts at merger between subsets of the six professional institutes have been attempted in the post-war era, often supported by government agencies, only one, between the ICAEW and the Society of Incorporated Accountants (SIA), has thus far been successful, and that as long ago as 1957.

The emergence of specific institutes is, of course, an outcome of historical *contingency* reflecting not only specialisms but national identities (England and Wales, Ireland, Scotland), competi-

⁴ Although the linkages and relays that exist between their actions and institutional structures are more likely to reflect unintended consequences rather than purposeful and predetermined design (Giddens, 1984).

tive pressures and, no doubt, basic historical accidents; as such we are not able to offer any explanation in our study of the origins/existence of this professional fragmentation, rather our study aspires to offer some insights into the institutional *re-production* of this fragmentation. Superficially, this fragmentation of professional associations reflects the variety of organisational sites in which accountants operate: central and local government, corporations, multinational firms, small partnerships and so on. Yet significant overlaps in the activities of members exist between several accountancy bodies, particularly the four accountancy bodies with the authority to undertake statutory audits. The maintenance of the fragmentation of professional bodies is more adequately thought of in terms of issues of status rather than technical necessity. For example, the formation of the Institute of Cost and Works Accountants (ICWA, now Chartered Institute of Management Accountants, CIMA) demonstrated how the ICAEW's view of 'gentlemen accountants', referred to earlier, towards employment in industrial organisations provided the social space for low status 'cost clerks' to form their own professional association of cost accountants (Jones, 1981; Loft, 1986).⁵ All four accountancy bodies (ACCA, ICAEW, ICAI, ICAS), authorised to perform the 'reserved function' (i.e., statutory audit) see this monopoly control as a source of superior status.

Within this subset, for several reasons the ICAEW has been able to make particular claims to status and prestige. It has by far the strongest historical relationship with the influential agencies of central government, even though the Chartered Institute of Public Finance and Accountancy (CIPFA) has the largest membership in local government and public sector organisations. Partly due to its location in the City of London, and its claims to reputation and its size, the ICAEW has interacted closely, through its Parliamentary and Law Committee, with government on economic issues since the early 1960s. Holders of the post of Head of the Government Accountancy Service (HOTGAS) have all come from the ICAEW. Sixty per cent of finance directors in the UK's top 50 companies are ICAEW trained and accredited (Matthews et al, 1998: 236–237). Other claims to higher status have been grounded upon the alleged superiority of accountancy training in (accounting and audit) practice rather than industry.

Thus, the institutional diversity of the professional bodies of accountancy appears to indicate both fragmentation and protective rivalry. While we may speak of the accounting profession, this has

no singular institutional expression, and there are no immediate prospects of this changing.

3.2. Occupational diversification and organisational context

If the existence of six institutes each claiming professional accountancy status has compromised the professional unity of accountancy, it is equally important to recognise that the diversity of services now performed by accounting firms in the UK extends far beyond the activities for which accountants are formally trained. Although it can be argued that accountants have long had an involvement in a range of consulting and commercial activities, going back to the 19th century (Jones, 1981; 1995; Matthews et al., 1998: 104–112), this has become both more extensive, and more visible, in recent years. Tax advice, insolvency and receiverships, special investigations, management consulting, IT consulting, public sector work, legal and financial services and even public policy formulation are routinely offered, in addition to the usual accounting and auditing functions. A reflection of this is the shift in terminology amongst the major players from being 'audit firms' to being 'professional services firms' (Greenwood et al., 1990; Cooper et al., 1996). While audit continues to be an important part of the portfolio of work undertaken by the Big Five, it is a declining proportion of their activities – accounting for perhaps 40% of fee income. Although there was significant growth in demand for audit services in the post-war era, this growth has been curtailed in recent years and the prospects for future expansion of this area of work appear limited.

Relatedly, just as accountancy has provided the basis for the professional services offered by audit firms more generally, so too have accountants become increasingly dominant in general management roles (Armstrong, 1985, 1993). Notwithstanding the rise of management qualifications, such as the MBA, an accounting training provides a route into senior management and boardroom careers, taking accountants into diverse corporate contexts. Thus, as well as having one of the highest densities of accountants per capita of any nation in the world, the UK has also a much higher proportion of accountants occupying senior management positions (Horowitz, 1978; Matthews et al., 1998: 235–239).

All of this might suggest a very contented picture of the accounting profession, and certainly both individuals and firms have capitalised on the successful expansion of the markets for their services. However, occupational and market diversification does present some significant challenges and difficulties for accounting as a profession (Tricker, 1983; Worsley, 1985). The first of these relates back to the matter of professional bodies. In the past decade signs have emerged of increasing

⁵ The rejection of the scheme for integration by members of the ICAEW in 1970 also seemed to reflect a view of their relative standing.

tensions in the capacity of these bodies to speak for their members (Hopwood et al., 1990; Cooper et al., 1994). Often such tensions have emerged out of precisely the entrepreneurial success of accountants in entering new markets not obviously connected to accounting expertise.

The disparate activities of the group collectively labelled 'accountants' provided the basis for the ICAEW's commissioning of the Tricker Report and Worsley Report into the organisation and structure of the ICAEW (Tricker, 1983; Worsley, 1985). For the same reason, problems in securing the consent of members in agreeing to accounting regulations (such as the inflation accounting standards), fee increases and, indeed, many types of reform to the education and training of accountants have been recurrent (Davison, 1987). In short, occupational diversity poses an important challenge to the capacity of professional bodies to speak for and gain the consent of a variegated membership.

3.3. *Big firm, small firm*

Linked to the occupational diversity of the profession is another source of tension in the professional project reflecting diversity in the organisational size and scope of accounting firms themselves. Strained relations have emerged between the Big Five firms and the small(er) practitioners, and in the relationship of both constituents to their accountancy institutes. Indications of this were revealed in Tricker's report that most senior partners of Big Six firms attached low priorities to the work of the ICAEW (Tricker, 1983) and were no longer motivated to involve themselves with the institute's professional committees. Yet accountants in small firms, by contrast, appeared to view the ICAEW as dominated by the national and global interests of the Big Six, whose allegiance to any national professional institutions or government might now be thought of as under question (Beck, 2000).

Viewed as 'industries', the economic domination of Big Five auditing firms is now considerable. For example, in 1999 PricewaterhouseCoopers employed over 160,000 staff and administrators worldwide. The annual global turnover of the firm was over almost \$17bn in the same year (<http://www.pricewaterhousecoopers.com/gx/eng/about/press-rm/fact.html>). KPMG, with over \$12 bn revenue in the same year, claims now to have offices in 821 cities and over 150 countries (<http://www.kpmg.com/statistics/Default.asp>). The commercial significance of the multinational auditing bodies has not been lost on the government agencies responsible for sponsoring the accounting profession.⁶ As an official of the Department of Trade and Industry explained to one of the present authors in the context of discussions on the implementation of the Eighth EC Directive:

'There are more accountants than steelworkers in the UK' (Robson et al., 1994: 512).

Such a large scale corporate environment has led some to presage an erosion of the linkages between the qualified accountant and the ideals of a profession with which he or she is purported to identify (Hanlon, 1994). Although the senior partners of the multinational auditing firms would be cautious in endorsing such a view, as the sociologist of professions Andrew Abbott has commented, the allegiance of Big Six qualified accountants is to the firm first and the profession second (Abbott, 1988; Anderson-Gough et al., 1998). Although the partnership structure of accounting and audit firms has often been defended as the appropriate model for professional practices, moves by certain Big Five firms towards incorporation of some of their core business is interpretable as a further loosening of the ties of professionalism, even if the motivation for such moves has a closer link to the rising costs of professional indemnity insurance and the rise in negligence suits against auditors.⁷

Just as diversification may have reduced the capacity of the profession to articulate its concerns with one voice, the perceived need for it to do so has intensified as debates about professional regulation evolve. For example, the idea that the profession should owe a duty of care to detect fraud is not yet accepted by the accountancy bodies themselves, but is suggestive of a wider lack of political confidence in the independence of auditors. Although the UK has yet to have the type of inquiry into auditor independence and the multinational audit firms undertaken in the US, such as Metcalfe and Dingell, some British Members of Parliament and academics have begun to question the role of the accountancy bodies in terms suggesting that professional status is not taken for granted (Cousins and Sikka, 1993; Cousins, Sikka and Willmott, 1993; Sikka and Willmott, 1995).⁸

This latter issue points up the overall difficulty which diversification poses for the profession. Commenting on the existence of consulting divisions in the (then) Big Six firms, Abbott has ar-

⁶ The potential to extend the earnings of the large auditing firms structured the negotiating stances of the British government during the development of EU Directives on Company Law (Cooper et al., 1996). Indeed, concerns about the independence of auditors led the European Commission to suggest restrictions on the activities of audit firms in its Eighth Directive on Company Law.

⁷ The 1989 Companies Act permitted incorporated firms to act as auditors, subject to certain requirements.

⁸ Other debates have focused upon the level of influence exerted by the large firms on the processes of accounting standard setting and on whose behalf that influence has been exercised (Hussein and Ketz, 1980; Haring, 1979). And, indeed, general commitments to neo-liberal political ideas may serve to question the monopoly control and closed markets of the professional firms.

gued that in such organisations:

‘...the association of work with profession is broken, and with it much of the professional association’s power’ (1988: 154).

In other words, the more that accountants enter into other activities, the more tenuous becomes their capacity to justify this in terms of the particular knowledge and skills which are taken to be the basis of their professional status. And given that this accompanies a fragmentation of the profession, both within and between its trade associations, it can be seen that the changing nature of accounting is a narrative of both undeniable success and cause for anxiety from the point of view of the professionalisation project.

This, we suggest, is the institutional context within which the daily conduct of accountants must be set.

4. Conduct: presentation, qualification and expertise

We referred earlier to the growth of studies that detail the ways in which accountants live and work, encompassing such issues as professional socialisation, recruitment and training, career progression and practice management. It was also suggested that these studies typically treat such issues in isolation from the wider context of the profession such as we have sketched (Hanlon, 1994, being the principal exception). We now want to turn in detail to the conduct of accountants. Although we will refer to some of the earlier studies, we will mainly be concerned to present new empirical material from a major study of the professional socialisation of trainee chartered accountants in the UK.

The study was conducted in regional offices of two Big Six firms (as was) and, again, such firms are of particular interest both because of their size and importance, but also because it is these firms which have most obviously developed into professional services organisations. We conducted 77 semi-structured interviews with trainees during 1995–1996 in a regional office of each of the two firms (‘Firm A’ and ‘Firm B’). In common with most Big Five firms in England, the trainees were all studying for ICAEW membership, and the interviews covered their experiences of recruitment, training, examination, work experience, and formal and informal appraisal.⁹ The interviews were

tape-recorded and coded using a Computer Aided Qualitative Data Analysis Software (CAQDAS) programme (Weaver and Atkinson, 1994). In addition, we drew upon internal documentary sources and very extensive, and long-standing, informal contacts and discussions within the firms, giving the study a quasi-ethnographic quality in terms of the depth and breadth of our involvement. To the best of our knowledge, this study is the most extensive qualitative research project ever conducted into the socialisation of accounting trainees in the UK. We discuss some of its findings under three headings: being professional, qualification as a professional; professional training and everyday work. Subsequently, we will return to the matter of how these relate to the context of fragmentation and diversification in the UK accounting profession.

4.1. Being professional

This first issue has already been well documented in the existing literature, and we therefore give only a brief account here. The trainees in our study, like those described by Harper (1988), Grey (1998) and Coffey (1993), understood the meaning of being a professional to be primarily that of a way of behaving: interview subjects viewed the idea of ‘professional’ as a reference to ways of acting. In the conduct of interview discussions about profession and professional, trainees invariably adopted a mode of response that referred to *being professional* and then elaborated this in terms of appearance, modes of conduct (to, for example, clients), etc, rather than summarising their role as professionals or their views as to what it means *being a professional*.

Being professional entailed the adoption of a particular physical appearance, including issues of personal grooming and ‘appropriate’ clothing. Relatedly, appearance in terms of ways of talking and writing were relevant. Also highly important was good time-keeping and readiness to work overtime as and when required.¹⁰ While trainees generally acquired this expertise in a largely informal way, in cases where individuals failed to do so, they were likely to be ‘pulled up’ by their seniors, either unofficially or, in some case, through rating and appraisal systems. Trainees in both firms received formal instruction in a series of personal conduct and appearance issues:

‘...qualities such as courtesy, punctuality, commitment, turning up looking tidy, presentable not sort of smelling of beer (laughs)’ (audit trainee, 3rd Year).

Less tangibly, trainees were encouraged to acquire or ‘reveal’ appropriate ‘social skills’ in relation to colleagues and, in particular, clients. Indeed, competence in such skills is an important part of the recruitment process. Sometimes this is ex-

⁹ Although as we shall see, the allegiance of the Big Firms to training with the ICAEW appeared solid, we should also note that among the qualified staff many had trained with smaller firms and had qualified with the ACCA.

¹⁰ The willingness to commit private time to the firm and to display this willingness was one of the more important socialisation processes. We have explored this issue in more detail in Anderson-Gough, Grey and Robson, 2000. See also Coffey, 1994.

pressed in terms of whether someone's 'face fits', but increasingly it is common to make such judgments in apparently more 'objective' (or objectified) terms derived from the firm's human resource management procedures (cf. Covaleski et al, 1998), such as 'team-working skills' and 'leadership competencies'. Within the recruitment process the existence of certain kinds of interests was deemed to stand proxy for these skills: most obviously, in relation to teamworking and, relatedly, 'fitting in', an interest in team sports is often seen as relevant. Although, ironically, trainees subsequently found little time for such activities, 'sports talk' did serve as an important social mechanism within the firms and betokens, or perhaps in part constitutes, a capacity to fit in, which is to say, to be successfully socialised (Anderson-Gough et al., 1998b).

The accomplishment of professionalism is, however, much more detailed than this. In his 1989 PhD thesis, Harper, drawing upon Goffman (1959), described the behaviour of audit trainees through a dramaturgical metaphor. He reported how certain behaviours correspond to 'front stage' activities in the sense of being performances in front of significant audiences. Certain behaviours were deemed unacceptable in front of the client (see also Anderson-Gough et al., 2000). For the trainees in our study, the significance of professional behaviour as a way of presenting activity rather than determining the content or quality of that activity was clearly dominant:

'...[T]urning up next day for work, ready for work even though you're feeling like crap. It's not being unprofessional [for example] going out the night before and getting drunk' (audit trainee, 1st Year).¹¹

Of course, being sober is only a small part of the professional activity, as it is for most occupations; nevertheless, the quotation captures a key aspect of the notion of being professional. Professionalism is a way of conducting oneself that tends towards the giving of an impression: being prepared to work to the same standard as if one did not have a hangover (or any other 'distraction' from the job at hand) is a key criterion.

Thus, the broader sense of being professional that emerged was connected to the idea of profes-

sionalism as appearance. Moreover, this notion of professional conduct was seemingly transmitted to the trainees in part through their formal appraisal procedures (cf. Covaleski et al, 1998). For example, the following respondent, an audit senior in Firm A, described the firm's appraisal forms in the following terms:

'...[T]here's other parts of the rating system where you talk about their professional conduct, their presentation and enthusiasm to learn, their desire to be inquisitive as to what they should be doing to better themselves at what they do, how they work. and they are obviously very, very important in the first six months, year probably and to some extent might become less important like with the guy who dresses smartly... it's quite crucial to catch i.e. does he give a professional impression to the client? It's probably quite crucial to catch early on to make sure that he's not continuously going through giving the impression to the client that he doesn't know what he's talking about' (audit trainee, 3rd Year).

It was clear that these appraisal forms reinforced the notion that 'professional' referred to a trainee's personal aspect and conduct, especially with the client.

The transmission of this notion of 'professional' was not conducted solely through formal instructions and the appraisal criteria defined by the formal ratings systems, although these appear to play a significant role in constituting the ideas of professionalism we observed. Indeed the daily activities and working environment sustain the understandings of professionalism displayed within formal (appraisal) procedures and documentation. As many respondents noted, trainees are concerned to exhibit conduct orchestrated towards fulfilling the (presumed) requirements of their immediate superiors:

'[Y]ou've got to almost try and impress people and every time you get given a job, even if it's only a minor job, you've got to try and put effort into it, even if it's just photocopying or faxing, you've got to make sure you fax it to the right person and you get it back and keep them posted what's happened with it' (audit trainee, 1st Year).

Perhaps nowhere is the conception of being professional and firm articulated so clearly as in the centrality of the construct of the 'client' in audit firms (see also Anderson-Gough et al., 2000; Dirsmith and Covaleski, 1985a, 1985b: 9-10; Grey, 1998):

'For the firm in general the clients are everything and probably one of the quickest ways to go and get yourself out of the firm is to go and really upset a client, and that boils down to professional conduct' (audit trainee, 3rd Year).

¹¹ To that list might be added adopting a 'professional' signature on audit papers, drafting letters and internal memoranda in a business-like way, acquiring a firm handshake, answering telephone calls in an 'efficient' way and adopting the recommendations of the firm's editorial and document style guides in external correspondences. On each of these matters, trainees received either formal instruction or documentation, although the reception by trainees of instruction on matters such as make-up was not often well received (cf. Coffey, 1993).

The importance of avoiding 'inappropriate' speech or 'general rudeness to clients' was noticeable in many of the 'atrocious stories' related to us by interviewees. For example, one interviewee in Firm A described how:

'I heard a story of someone who threatened a client with saying 'if you don't find this bit of information I'll qualify your accounts' and this was some junior person – all the client will do is 'phone up the manager or the partner and say "what is going on?"' (audit trainee, 3rd Year).

Another audit trainee reported:

'... somebody blew up at a client once, not a manager, somebody at the level that I am now, not in my year, going back years ago and I think that wasn't viewed as being particularly professional because it ... annoyed the client intensely, and it just created an awkward situation...' (audit trainee, 3rd Year)

In neither quotation is the detail of the narrative very vivid. In both there is the implication that the events occurred before the respondents joined the firm and the interviewees had heard the story through others. Both stories may very well be apocryphal, exaggerated and, we suspect, founded upon the same incident, but the 'moral' of both in terms of behaviour towards clients is apparent: the perception that their firms address most issues of 'professional' in respect to attitude and conduct to the status through a service ethic expressed through the discourse of the clients.

In summary, then, through the minutiae of practices, a certain way of behaving, acting, talking, looking – in short, being – constitutes the dominant understanding of being a professional among the trainees we studied. In the following section we move on to consider the relationship trainees identify between themselves and the 'profession'.

4.2. *Qualification as a professional: idealism and credentialism*

Although professionalism is typically conceived of as a way of behaving, this does not mean that trainees lacked concern with formal accreditation as professionals – indeed, the contrary. The way in which accreditation was conceptualised, however, appeared some way removed from the traditional picture of the profession as a repository of technical knowledge or as exemplifying a public service ethic. For the majority of the trainees we interviewed, the act of *qualifying* as a chartered accountant, or, more exactly, *having* the qualification, provided the overriding discursive rationale for taking employment with a Big Six firm. The following quotation (from a first year audit trainee) expresses what emerged as a governing viewpoint:

'I think it is, without being too corny, a very

good business qualification to have. It's got more standing, in my opinion, than a lot of the research, well, not research, but MAs and things like that, that exist' (audit trainee, 1st Year).

Notwithstanding the everyday audit work that the trainees are expected to perform, the accountancy training was seen to provide another form of education for graduates, which seemingly offers a general business or management training. Allied to this viewpoint were a number of subsidiary issues that might be taken as a comment upon the analysis of the 'fate of idealism' that has been found in studies of trainees in other professions (Becker et al., 1961; cf. Harper, 1989).

Most trainees conceived of their career (after qualifying) as a track that stretched beyond qualification with the firm; for example, rather than actively choosing to be accountants or auditors, for some the decision to take employment with a Big Six firm and undertake the professional examinations was rationalised in terms of a deferring of difficult choices concerning future careers:

'...[A]n experiment to see what would happen' (audit trainee, 3rd Year).

Some interviewees reported that they considered their entry into the firm to be almost a matter of drifting into a respectable form of employment with little specific consideration apparently given towards the work of accountants or auditors; the erosion of 'idealism' found among medical students here stands in contrast to the lack of trainee accountants' idealism to start with.

For others, the choice to train as a chartered accountant was viewed specifically as a means to pursuing definite careers after qualification in areas of general business, taxation or banking:

'I was told by a number of people, one of them whose father's a partner in a merchant bank, said if you wanted to go into merchant banking the best way in if you want to be at partner level is to be a qualified accountant' (audit trainee, 1st Year).

Of course, other reasons for joining the firm were also offered: the possibility of foreign travel and secondment abroad in a multinational auditing firm, for example. Recognition that accountancy qualification opened rather than limited choices or career plans, however, was mentioned frequently. While other trainee professionals may choose their profession and begin their training with a strong sense of why the work they will be doing is important to them and the public (and perhaps see this service ethic corroded later, cf. Becker et al., 1961), trainee accountants seemed to place little value on the profession per se. In other cases, the explanation of career choice was less a matter of 'drift' and more due to the perceived difficulty of

entering employment in business directly. The big accounting firms (unlike some of their smaller counterparts) had no particular predilection for graduates with relevant accounting or management degrees, and so were seen as the foundation for such graduates to enter business occupations:'

'At the end of the day I didn't really have an idea of what I wanted to do in the long term, but I knew in the short term a chemistry degree probably wouldn't be that relevant to business, therefore go for accountancy. It's the classic thing, get the qualification and then look for something to do' (audit trainee, 3rd Year).

We would, therefore, suggest that the notion of professional socialisation leading to an identification with the accountancy profession is undercut by the instrumental relationship that trainees assume toward the accountancy qualification. The rationalisations that trainees offered to us of their recruitment into the firm or profession gestured towards a broad notion of 'business career' and the value of the accountancy qualification. This instrumentality serves to undermine any perceived allegiances towards or identification with either the firms themselves or the accountancy bodies. Instrumentalism is also sustained by the occupational diversity of the profession in that not only is a career within public practice not possible for all trainees (as there are limited senior positions in the firms), but the general careers advice presented to graduates presents the qualification precisely in terms of a key to various lucrative job opportunities. In short, identification was not primarily with an abstract notion of profession, professional institute or, indeed, the firm, but with the qualification.

¹² Moreover, this motivation was reinforced in several ways by the firms themselves, trainees were made aware of the significant cost that their employing firms paid to the external tutoring agencies, and of the cost implications should they need to retake examinations – for which costs trainees would be liable on a personal basis. Both firms operated, in theory, a stringent policy towards succeeding at the Graduate Conversion Course (GCC) stage of the ICAEW examinations: many trainees commented upon the possibility of being 'fired' if they failed GCC. This certainly did happen during the period of our research, but in both firms we found there were exceptions made for those who 'just failed', although not in a consistent manner. At the Intermediate stage the possibility of being asked to leave the firm for failure in the professional examinations was also genuine, although at the Finals stage there was a much more tolerant approach towards not passing first time.

¹³ Whether such a seemingly slender sense of attachment to the firm remains with trainees once they have qualified is unclear, and beyond the scope of the present study, although we did note that those close to qualifying often expressed the desire to wait for any developments (or 'signs') within their firm before moving to external employment. The enticement to discover whether a long term career within their Big Six firm was a possibility that might seem to be difficult to resist after three intensive years of training.

If qualification is the dominant motif of trainees' understanding of professional accreditation, it is unsurprising to find that the centrality of passing the professional examinations is well understood by them, both in terms of the possibilities for advancement within the firms and the opportunities externally for developing a career.¹² For a few trainees, albeit a minority, being a professional accountant was identified directly with having succeeded in passing the ICAEW exams.

'I don't think you've got a right to sort of feel as though you're superior until ... you've actually achieved something until you've got the qualification, only then really I think you're a professional' (audit trainee, 1st Year).

Although the above quotation does not express a dominant view in terms of the articulation of professional and professionalism (which we described earlier), accounts of the experience of the pressure of the professional examination process upon the trainee were ubiquitous.

In summary, the dominant account from the trainees is that the firm is a vehicle to the achievement of the professional qualification, and qualification is in turn a vehicle for career options and success.¹³ As such, the examination process assumes a central and important place in the trainee's experience. Passing the examinations might be defined by some as the process of becoming a professional, an experience structured by the terms of employment within the firm and the temporal commitments that work and study place upon the trainee. Trainees' orientation towards exams seemed only marginally concerned with issues of the technical practice of accounting. We move now to considering directly the trainees' views of these issues

4.3. Professional training and everyday work

As the appropriation of expert knowledge is considered one of the key elements that is said to separate the professional from the layperson, in this section we study how trainees value and appraise the knowledge and expertise they are taught by the professional tutoring agencies and tested upon by the ICAEW in order to evaluate another aspect of the relationships between the professional identity and the institutional context of accountancy.

Many of our interviewees were keen to discuss the professional examination procedures that they were experiencing on the way to becoming qualified accountants, although as usual it is difficult to summarise the views and attitudes expressed into one coherent standpoint. For example, although all our respondents agreed with the sentiments expressed in the previous section, that the study for examinations was arduous and time-consuming on top of the 'nine-to-five' of auditing or tax work,

there was some divergence of views concerning the merits of the knowledge imparted and its relevance to the work of the auditor or tax expert. Most agreed that, in the initial phase, the study involved in passing GCC was often detailed and intensive in terms of particular topics of study, but, particularly for trainees with 'relevant' degrees, also corresponded most closely to the study of 'academic' subjects they had experienced at university in their undergraduate degree. The rather obvious difference was the amount of attention given to book-keeping techniques, a subject with which most would be unfamiliar. Even those with a relevant degree acknowledged that the amount of detail in the foundation accounting stage was much greater than on an equivalent accounting degree.

Beliefs as to the relative importance of the knowledge attached to the study involved at the Intermediate stage varied widely. Many saw the 'technical' knowledge as of some importance even if that importance was not always immediately apparent.

Other interview subjects who freely admitted to failing to see the relevance of the professional examinations were content to take the view that its relevance would unfold in due course. But many interviewees seemed indifferent to whether professional examinations were especially relevant to practice at all. Instead, they were seen simply as something to be 'got through' (Power, 1991) to achieve qualification. For example, interviewees from both firms let us know that good performance in examinations in terms of winning prizes was not particularly valued by the firm, and this was taken as a key indication of their relevance to the firm's activities – the examinations were there to be passed:

'I think the professional exams in terms of [the firm] are seen more as a hassle that we have to go through rather than an actual benefit' (audit trainee, 2nd Year).

This perception that the technical content of the professional examinations are largely structured by the need to examine trainees, coupled with the belief that doing well (albeit passing) in the examinations was not relevant to the firm, was seemingly reinforced by the reactions of trainees to the schooling of the external tutoring agencies (Power, 1991) who were there to get people through the examinations:

'They're [external tutors] very helpful, they give you the massive study packs, plenty of questions to work through and they will tell the areas you need to know intimately. They were very directing you to pass the exams. The aim is for them to get you through the exams' (trainee auditor, 1st Year).

Thus, professional examination might be thought of as 'technical' in two senses: to refer to accounting techniques (whether practically relevant or not) but also to refer to examination techniques, ways of addressing examination questions so as to maximise the process of gathering pass marks. The sense that tutoring was oriented towards (the technique of) passing the examinations rather than understanding the technical material led on to the views expressed by a significant minority of trainees that the examinations process itself was simply a means of erecting a barrier to entry into the occupation (in the fashion of Weberian theory of professions). The examinations, to some trainees, seemed to lack consistent focus, especially in the Final stage. One recently qualified auditor commented:

'They gel only in the fact that you have to know all your Intermediate stuff before you could contemplate doing Finals. But having said that you could have done the Final a week after Intermediate, given the set of exams that we've done. That seems to be the consensus that you needn't have learnt any of the new stuff because it just wasn't tested' (audit trainee, 3rd Year).

There is some irony here in that the new material introduced in the Final stage was intended to provide the kind of 'business skills' that graduates might require in employment outside of the accounting or auditing firm, the aim being to hone 'practical' reasoning skills in contrast to the more academic skills tested by the professional examination process. Nevertheless, both hostility and confusion was expressed towards the aims and content of the Final stage examinations:

'I don't really think, I'm not totally sure that they know what they're testing by their exams. Maybe people always joke that way that when they join the Institute they're going to make it even harder for anyone else to pass' (audit trainee, 3rd Year).

Trainees expressed substantial degrees of cynicism about the way examinations are marked and how the pass rate is decided upon, this subject being a prevalent topic of conversation and myth among the trainees studying at the professional tutoring agencies. For example, one trainee suggested that:

'[T]he way I perceive it works is there's only 60% of people who pass or something like that so in theory you could still get 90% but because of the way they limit entry, in practice you would never get 90% in an accounting exam. I don't think unless they fudge the figures, but I think they do massage the pass mark and things like that to get a certain number of people through' (audit trainee, 3rd Year).

We are not, of course, claiming that the trainees are *correct* in their understanding of how the Institute functions. But we are suggesting that, so far as many of the trainees are concerned, examination as a 'barrier to entry' is all of a piece with their conception of training as a 'hurdle to be jumped' in order to gain the qualification. Views as to the value of accountancy training were surprisingly diverse, with many doubting the value of the 'knowledge' gained through formal professional instruction. Allied to this view, the resulting emphasis upon 'getting through' structures a highly instrumental attitude towards the examination training that is notionally intended to provide the knowledge base for accounting expertise and practice, and the role of the professional body that administers it.

One consequence of this is the relationship between the trainee 'professionals' and the accountancy bodies, in this case the ICAEW, is visualised by trainees almost entirely in terms of the examination process: setting and marking of examinations, paying fees, etc.:

'[T]here's going to be rules and regulations which are Institute driven, certain stuff that they do that you need to pick up on. But by and large the only time you're going to hear from the Institute is to send in an application form, send them some money and they'll send you the results back' (audit trainee, 3rd Year).

Other areas where trainees perceive some relationship between themselves, their work and the accountancy body seem to be confined to two specific issues: compiling training records and receiving the Institute Handbook:

'There is the Institute Handbook which is distributed every year to staff. I would say you are basically just told to read it as well. I started to read it but I know a lot of people don't finish reading it' (audit trainee, 1st Year).

The above quotation arose in the context of a discussion of professional ethics; in almost all cases the issue of training in matters of ethics was referred to as the 'binder' each trainee received from the ICAEW and which they were presumed to read.

In summary, many interviewees' initial commitments to professional training was oriented towards gaining a credential relevant to business training rather than the fact of being an accountant. This would suggest that the relationship between identification with *both* profession and firm is undercut by trainees broader conceptions of their future career. The experience of professional training was described by many of interviewees as an obstacle that firms expect trainees to overcome, but which is not necessarily valued as a learning experience.

The style of tutoring by the external agencies is widely interpreted as reinforcing the pressure to 'get through' the examinations. No doubt as a direct consequence of these experiences, many trainees (but not all) see few linkages between the material they learn and are examined upon, and their everyday work within the firm and at clients. This may account for the widespread cynicism toward the examination process and its value: criticisms of the examinations – especially the Finals but also the process of changes introduced into the pass mark systems – were widespread. Outside of the examination process, trainees see few linkages between their work as 'professionals' and the accountancy body to which they aspire to qualify.

5. Discussion: linking context and conduct

In this section we discuss the connections between the institutional context of accounting and the conduct of accounting trainees. First, we consider the issue of professional *behaviour* as the dominant understanding of being a professional. Here the connection with the institutional context is that, as the accountancy profession diversifies, it enters into areas where the possession of particular technical accounting or auditing knowledge is largely irrelevant (Radcliffe et al., 1994; Grey, 1998). In consulting services, for example, what might be at issue could be the development of strategy or an organisational restructuring. In insolvency services it might be the day-to-day management of an insolvent business. In these cases, knowledge of auditing will be largely irrelevant, and many of the skills needed do not form part of professional examination and training (although they may be the subject of in-house training). Why should clients buy such services from Big Five firms rather than other (non-accounting based) consultancies? If the answer does not lie in the particular knowledge possessed by the staff of such firms, then they must seek to be persuasive in other ways.

Therefore, in industries where the technical basis of expertise is tenuous, if not absent, it has been observed that the adoption of professional behaviours becomes a significant competitive weapon. For example, Alvesson (1994: 545) argues that advertising professionals, whose expertise is less clearly defined than in the 'classical' professions, seek to display professionalism through the deployment of more personalised qualities and appropriate behaviours. In the same way, as some of the quotations we presented earlier in the paper suggest, trainees are aware that the appearance of competence and knowledgeability are vital to client relations. We suggest, then, that this generalised notion of professionalism as conduct rather than knowledge is highly congruent with the shift from firms being largely audit based towards being professional services firms/providers. *Client service* is

elevated as the central value transmitted by socialisation, to the extent that one trainee felt that such service should be provided, even where it involved dishonest or morally dubious actions. However, what we did not find from the trainees was a sense of the fact that their client, as defined in successive Companies Acts, is the (often absent) owners rather than the (immediately present) managers of the company (cf. Dirsmith and Covalleski, 1985b: 9).

Second, within this occupational context, the instrumentalism and career consciousness of trainees, which we reported earlier, also take on a new light. The primary rationalisation for joining a Big Five firm expressed by the trainees was that of gaining an accountancy qualification and the ICAEW chartered accountancy qualification was widely perceived to offer the best, or highest status, of these and a good general business qualification. The issue for trainees was 'getting' the qualification as a passport to wider, and indeed, diverse, career goals, which might often be outside the accountancy profession (though perhaps after taking an attractive overseas secondment within the global firm). In some cases, the choice of accountancy seemed to be little more than a matter of inertia carrying individuals from university to a training contract. For others, it offered a way of compensating for a commercially 'irrelevant' degree. And for others still, it represented the normal progression from a relevant accounting degree. As such, professional status was regarded as no different in type from other types of qualification (such as MBA), albeit that, by definition, the trainees to whom we spoke saw it as having definite advantages in the UK over the alternatives on offer. These advantages might include the fact that the qualification could be gained while earning a reasonable salary rather than having to both pay fees and forego earnings.

As we noted in our section on context, the understanding that in the UK accountancy is a valuable and valued management qualification is reflected in the relative proportions of accountants holding senior management positions in large companies (cf. Matthews et al., 1998: 236–7). Although we found evidence that trainees became committed to their training firms, we found very little indication of a commitment to the work itself, and still less did we find a moral commitment to the ICAEW or 'accountancy' per se. The dominant attitude towards the qualification was therefore what educational theorists have called *credentialism* – by which is meant the achievement of qualification as an end in itself or instrumentally as a means towards some other reward, rather than according the qualification an intrinsic value. In this way although professional socialisation is largely defined by the organisation – that is, the (Big) firm – these commitments appear to be undercut by the

trainees' instrumentalist attitudes towards the training and qualification process. It seems to us plausible to link the relative lack of professional or organisational identity as an *unintended outcome* of the success that accountants in the UK have had in moving into occupations of corporate management (and other organisations) that are not directly concerned with the practice of accounting or auditing. In turn, the continuing colonisation of new markets for non-accounting services is furthered by the lack of professional identification. In effect, the absence of identification with occupation or profession is both a *medium* and *outcome* of the increasingly extensive and varied markets for accounting labour in the UK.

Viewed from a traditional perspective on professions, this instrumentalism might appear somewhat shocking, since it exhibits none of the traits (Wilensky, 1964) with which professions are supposedly endowed. Equally, from the perspective of an individual firm, it might seem to betoken a worrying lack of organisational commitment. But, given the *changing* nature of the profession, it emerges not as anomalous but as consistent. Just as accepted expertise in audit provides the firm with an organisational platform for the diversification into professional services, so trainees regard the acquisition of qualification as a platform for a variegated set of career options, both within and outside of their training firm.

Third, it is then less surprising to find that no *intrinsic* value is attached to the content of the examinations since over-attachment to such content would hardly equip the trainee for the likely diversification of post-qualification careers. In this context for students to lay great stress upon techniques for *exam passing*, while often remaining sceptical about the utility of what they are taught, both mediates and reflects an identification with the profession as a lucrative gateway into 'business'. In turn this aids in reproducing the occupational configuration of the profession in which the establishment of expertise in accountancy is a technique through which expertise in other areas is claimed and promoted. As we demonstrated earlier, possession of an accounting qualification has, thus far, proved a far more effective route into senior management positions than any other form of post-degree specialisation. The trainees make it clear that they view qualification as a passport to other things, rather than an end in itself and they are 'right' to do so: somewhat paradoxically, over-attachment to accounting as a unitary profession would be unhelpful in terms of what being an accounting professional means in their varied work situations.

Fourth, the understanding of passing qualifying examinations as being a hurdle to be jumped also links to the context of the fragmented nature of the

professional institutes, but in two distinct ways. First, there is little doubt that trainees see the rigours of qualification as being directly linked to the prestige and status ascribed to the ICAEW, as compared with some of the other professional bodies, and no doubt they also carried away from them into other careers a commitment to maintaining the 'value' of the qualification in the face of institutional change, such as merger with a 'lower status' body. So the trainees are in the process of reproducing the enduring fragmentation of these bodies. While the fragmentation of accountancy in the UK is, as we have noted, a complex historical outcome and, in part, unintended, the socialisation of auditing professionals does not indicate any strong identification with a unitary profession of the order that might in the foreseeable future mobilize members support for mergers among the various institutes. Moreover, identification with firm rather than profession also re-affirms the Big Firm, Small Firm factionalism (Tricker, 1983) that has characterised debates on, for example, reform of education and training within the ICAEW. The status differences perceived by trainees, reinforced by the firms themselves, help to confirm and reproduce that fragmentation.

But, secondly, and going back to the issue of professional behaviour, the possibility of a common language and form of conduct is again relevant. We suggest that this is helpful in facilitating and accommodating the tensions of diversification. A sense of professionalism tied to conduct, rather than to particular knowledge or qualification, provides some degree of commonality amongst accountants, even when this commonality is not reflected at the level of their professional bodies. As we noted early on in this paper, the development of appropriate behaviours should not merely be thought of in terms of competition. Rather, they may also have the capacity to effect professional solidarity, as Freidson (1994) suggests. Whereas Grey (1998) observed professional behaviour in just one firm (Firm A of our study), we have found a very similar picture in two firms (and other studies have confirmed this). This suggests that professional behaviour is not just a competitive weapon but rather describes a sort of 'language' which enables commonalities to be experienced and defined between accountants, as well as across different specialisms; norms of professional behaviour contribute towards a kind of solidarity within the profession. A trainee from Firm A meeting another from Firm B might be surprised to find how similar they are in terms of their

understandings of professionalism. By the same token, accountants in industry who have trained with a Big Five firm may be expected to exhibit a similar commonality of behaviour. As we suggested earlier, 'homosociality' can provide a basis for predictability, trust and communication amongst otherwise disparate people – it is for this reason that mergers between firms occasion substantial efforts to homogenise socialisation processes (Morris and Empson, 1998).

We do not intend to be cynical about the instrumentalism and careerism of the trainees. Indeed, our analysis would only appear cynical to the extent that one was ever persuaded by the 'idealism' of the traditional picture of professions in general, and the accounting profession in particular.¹⁴ Rather, we have sought to provide an antidote to the somewhat de-contextualised accounts of professional socialisation found in the literature so far. Even where these accounts have concerned themselves with the context of organisational control within which professionals work (e.g. Grey, 1994), they have been largely inattentive to the structure of and markets for the profession as whole.

Similarly, we have found that, within the firms studied, it is commonplace for more senior managers, and especially those with human resource responsibilities, to bemoan the instrumentalism of their trainees. This is sometimes ascribed to changes in youth culture more generally (the 'Generation X' syndrome). But we want to suggest that professional socialisation as currently experienced by trainees is tied into something, or rather is a *relay* between the imperatives of organisational control and these professional and institutional configurations. Professional socialisation, at this level, largely fails to foster or promote the ideals of specialist knowledge and public service.

6. Conclusion: professional conduct and social contexts

Most studies of accountants' daily lives treat the minutiae of their behaviour almost as a 19th century anthropologist might treat the peculiar and exotic rites of an isolated tribe. But, far from being isolated, we consider that the details of conduct which we have detailed are linked to the fragmented and changing context of the accountancy profession. The 'agency' of professionals is both a condition and outcome of the professional institutions and the structure of their environment (Giddens, 1984.; Dirsmith et al., 1997: 5). The 'rites' and accomplishments of professionals that are achieved on a day-to-day basis within the firms and their clients' organisations, and the environment in which the firm operates is also of significance in any analysis of socialisation. The notion of professional identity which forms during the time spent on training contracts reflects the flexi-

¹⁴ It is 40 years since Becker and his colleagues debunked the 'fate of idealism' among trainee doctors; it would be startling to find that idealism apparently exists amongst auditors but not doctors (Becker et al., 1961).

bility and lack of restriction that is part of the wider environment of occupational diversity and the lack of an overarching professional body.

Of course, there are many other dimensions of 'context' that could be the subjects for further research. One particularly intriguing issue is the reproduction of patterns of gender domination in Big Five firms in spite of concerted and conscientious attempts by the firms' personnel departments to balance the career trajectories of male and female trainees, and qualified auditors. While some historical research has begun to explore the gendering of the profession (Kirkham and Loft, 1993; Hammond and Streeter, 1992), little of this has yet taken an ethnographic examination of the current practices of audit firms (but see Dirsmith et al, 1997; Brennan and Nolan, 1998; Anderson-Gough et al., 2001). Issues pertaining to ethnicity and class are also relevant matters for further research although it is our view that insofar as class issues are germane, these are often reflected in the recruitment processes of Big Five firms. Moreover, while the research we have conducted thus far is not conclusive, it would be our argument that although the Big Five firms are certainly ethnicised, in that they are inhabited by a pre-dominantly 'WASP' community, the firms we researched indicate little evidence of overt racism.

Finally, reflecting on the relationship of auditors' training and socialisation in Big Five firms, it is worth contrasting some of our findings with the study of the changing knowledge of accounting, as evidenced in Armstrong's study (1993) of CIMA accountants. Similar concerns with the 'value' of training as a preparation for senior management roles are exhibited in both professional bodies yet with ICAEW accountants their justifications appear to reside centrally in a vigorous belief that 'practical' experience of audit (and other professional accounting firm services) provides the training ground *par excellence* for future managers, though these justifications are in contrast to the valorisation of 'management accounting training' by CIMA accountants. Certainly institutional concerns with the syllabus of professional examinations have surfaced continually within the ICAEW, but these have tended to reflect the dissatisfaction of the Big Five firms with the number of their well qualified and costly trainees failing the professional examinations.

Modifications of syllabus towards the 'practical' have taken place with, for example, the introduction of a Final Examination 'case study', though the general reception of these changes by trainees has been sceptical. As our study shows, the trainees adopt an overwhelmingly instrumental attitude towards the professional accreditation process, and this, as we have seen, is consonant with and helps reproduce the development of accounting firms

into ever broader markets of management and financial competence.

Nevertheless, while discourses of the practical appear to inhabit the reasoning of both CIMA and ICAEW accountants and trainees, another point of contrast is the lowering of status that appears to be taking place in audit firms with respect to the practice of auditing. Notwithstanding the claims of practicality and general business training that trainees attach to their work in audit firms, one curious element of this is the low esteem in which audit is held once qualified. Audit is no longer held to be a lucrative, challenging or enticing career within the firms by the majority of those who either leave or remain with the firms in the hope of future partnership. Armstrong's work, in as far as it considers this issue, does not appear to indicate a process of lowering status to the practice of management accounting.

This paper has sought to focus on the role of socialisation within the reproduction of the successful professional project of accountancy. Current trainee socialisation practices within large accountancy firms connect to the building and maintenance of professional jurisdictions (Abbott, 1988) in that they offer a potential basis for the reproduction of the power of a fragmented profession entering increasingly diverse markets.

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Book reviews

Grounded Theory in Management Research. Karen Locke. Sage Publications (2001). 160pp. £16.99. ISBN 0-7619-6428-2

As its title suggests, this book provides a discussion of the use of grounded theory in management. The book is structured in three parts; part one locates the intellectual roots of the approach; part two covers the range of approaches that have developed under this broad categorisation, and discusses how to undertake projects of this type; part three reviews the studies that have adopted the approach and in doing so moves towards an evaluation of grounded theory. The book is aimed at the PhD research student, or those wishing to adopt this research approach and who are looking for a foundational overview.

Despite the inevitability that any introductory text leaves many issues under-developed, the work nevertheless succeeds in its aim of laying out the broad foundation. Because it reviews a number of studies that have used grounded theory, those who wish for more detail have the references to guide them to studies that will provide this.

The overall structure of the book is sound. In providing some discussion of the roots of grounded theory (GT) the work emphasises the importance of careful consideration of the philosophical underpinnings of research work. It provides an important understanding of the justification for this type of approach and highlights the need for qualitative research to be based on a clear understanding of why that approach is adopted. There is a need for qualitative researchers to be able to demonstrate the rigour of their methodology. Equally, there is a danger that some studies fail to move beyond the level of careful description because it is not grounded in a clear understanding of the a priori assumptions that justify the need for such work. Without an appreciation of the philosophical roots of their work, it is difficult for researchers to substantiate why they undertake research in a particular fashion, and to be clear that the questions they ask can best be answered by adopting that approach.

The discussion of these issues is necessarily rather short and at times is simplistic, however it is a good frame for those at an early stage in their understanding of grounded theory. The references provided by the chapters do, however, give good signposts to those wishing for more detailed analysis.

The second section – ‘how to do GT’ part 1 –

gives students a sound understanding that the label ‘grounded theory’ covers a number of diverse approaches. It provides a good understanding of the similarities and differences between the various ‘brands’ that lie below the umbrella label. This is immensely valuable to anyone wishing to adopt GT, as it clarifies the terminology and is a real aid to avoiding confusion for those not entirely clear about the diversity of approaches and terminology. In providing this comprehensive overview the book provides the basis for researchers to move confidently towards their data collection and analysis.

The third section implicitly fills in more details of how to approach GT, through the discussion of the various studies undertaken and through their evaluation. This section provides a ready made bibliography for those who wish to undertake a detailed exploration of GT and shows the genesis of the approach in management studies. It re-emphasises the diversity of approaches found. On one level, this can be disconcerting for those approaching GT for the first time, however it should also be encouraging. Provided one has a sound understanding of the methodological imperatives that underlie GT and these are adhered to, then as this section of the book demonstrates, there is room for developing the basic approaches.

The section also addresses the important issue of how one might write-up GT studies. This issue is sometimes ignored, but it can be a difficult one for those undertaking qualitative research – the paradigm is not the tight one that more positivistic approaches provide and this can be disconcerting for the novice. The chapter does not provide any answers, but by raising a number of questions and issues for discussion, the author provides reassurance. She implicitly rebuts the possibility that there is a way to do these things that can be discovered if only the novice could find the correct ‘recipe’.

In summary, the book provides a sympathetic review of grounded theory that provides many pointers to those who wish to adopt the approach. One might argue that a more critical approach would have provided a more satisfying discussion of the approach, nevertheless the book provides a useful resource. As such it is a useful exploration of GT rather than a critical evaluation. It does not provide all the answers to the questions of those who wish to embark upon research using this approach. Instead it highlights that there are questions that

remain to be answered and it highlights the fluidity and the diversity of the different streams of thought under this label. This is an extremely useful contribution especially for the novice who may spend time worrying about whether s/he is doing things 'right'. As the book is geared to management research, it does not review the work recently undertaken in accounting using this approach. The work of Lee Parker is notable in this respect, and a number of PhD students under his supervision have worked in this mode. Parker and Roffey (1997) provide a good reference for those who wish to explore the use of GT in the context of accounting studies (and also provides a pointer to other qualitative approaches at the same time).

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Royal Holloway, London

Jane Broadbent

Behind Closed Doors. Vivien Beattie, Stella Fearnley and Richard Brandt. Palgrave. £45. ISBN 0-333-74784-4 (hardback).

This book constitutes a major output of a research project, funded by the Centre for Business Performance of the ICAEW, examining the ways in which finance directors (FDs) of companies and the engagement partners of their auditors (AEP) interact during the conduct of statutory audits. To those who have not been involved in the final stages of an audit, the book offers valuable insights into the audit process and offers interesting evidence of the pressures at work. In so doing, it provides ammunition, in the form of examples of both good and poor practice, for both supporters and critics of the current regulatory regime. However, the book goes beyond 'investigative journalism' by applying a grounded theory approach to adduce a theoretical basis for the FD-AEP interactions and to provide a way forward for future research. It offers a taxonomy of AEP types ('crusaders', 'accommodators' and 'rogues' amongst others) and suggests a number of policy implications arising from the research.

Although I have some reservations regarding specific aspects of the book (outlined below), it is undoubtedly a worthwhile and interesting addition to the bookshelves of all concerned with auditing practice.

The book consists of three parts: the three chapters of Part I give the background to the study; Part II offers six case studies of FD-AEP interactions and a brief introduction to the theory and method underlying these; while the three chapters of Part III are concerned with cross-case analysis and the conclusions that may be drawn from them.

Considering first Part I, after a short introductory chapter, Chapter 2 analyses the auditor-client relationship and contains useful thumbnail sketches of various aspects of the research literature including the demand for audit, audit quality and auditor independence (although the absence of any mention of Benito Arruñada's writings in this area was surprising).

Brief coverage of the questionnaire stage of the overall project is given in Chapter 3, but this tantalises rather than satisfies. The results of the questionnaire-based work have already been published and presumably it was intended that the brief details provided in the book should not repeat what is already in the public domain. However, the reader is left feeling that the questionnaire stage probably constituted a more important aspect of the project than is apparent from its coverage here. More information would have provided valuable contextual material.

Part II opens with a short introductory chapter, which, like that for Part III, could have been more substantial and given more explanation of the material covered. Chapters 5 to 10 are the detailed case studies of the six (anonymised) FD-AEP interactions that form the core of the research. The six cases apparently selected themselves: from the 153 company FDs who responded to the original questionnaire, 23 were willing to be interviewed and six responses 'indicated high levels of negotiation and discussion' had occurred. These were thus chosen as interesting (although clearly atypical) cases.

A concern with this part of the book is the degree of repetition evident in some sections. Some is stylistic, e.g. p.32 re the questionnaire stage and p.44 regarding information exchange and negotiation phases, but some is structural. The latter is most noticeable where, following background information relevant to the case studies and identification of key issues, the detail of the case is provided, including extensive quotations from the parties to the negotiations and narrative notes from the authors. Thereafter, an analysis of each interaction summarises what has gone before (and includes figures: see below) but does not add greatly to it. Given that the detailed narratives may be seen as a key feature of the book and are themselves well structured, the summaries seem almost redundant.

Twenty-seven figures representing the interactions are provided. Usually I am an advocate of the use of graphical methods but I have doubts in this case. In each chapter, after the description of each case, the summary and analysis provided includes two or more figures. These added little to the narrative and I wondered why they had been included. This was particularly the case given that seemingly no use was made of the figures by the authors in the analysis within each chapter. Later,

on reading the material presented in Part III, one can see that such figures may be a useful tool in the process of generating theory, but must question whether the analytical tool needs to be presented to the reader at this stage.

My final concern relates to the three-part structure adopted for the book. While I would not seek to alter the structure of Part I, the presentation of the material on grounded theory in Chapter 11, *after* the cases studies (albeit briefly trailed in Chapter 4), could be better organised. Chapter 11 contextualises the analytical material presented in Chapter 5-10 and thus makes it easier to understand the approach being adopted. The structure adopted may be due to a desire not to include theoretical material in Part II, which is otherwise ac-

cessible to the non-specialist reader. However, I am not convinced that this presentation is optimal.

In summary, this book, apart from being an enjoyable read, warrants the attention of all concerned with the audit process, whether auditors, company directors, researchers or simply those with an interest in the subject. To some extent the concerns noted derive from the heterogeneous nature of the target audience. The general reader who is interested in the narrative material may find the theoretical content a distraction, but the more specialised reader may wish for a more thorough exposition of the underlying theoretical material. As with all accounting issues, the difficulty is striking the right balance.

Pelham Gore

University of Lancaster

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Accounting and Business Research

International Accounting History Special Issue

Alan J. Richardson and Laura D. MacDonald, Linking international business theory to accounting history: implications of the international evolution of the state and the firm for accounting history research

T. A. Lee, The contributions of Alexander Thomas Niven and John Ballantine Niven to the international history of modern public accountancy

Dale L. Flesher and Marilyn Taylor Zarzeski, The roots of operational (value-for-money) auditing in English-speaking nations

Sally Aisbitt, Harmonisation of financial reporting before the European Company Law Directives: the case of the Nordic Companies Act

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Special issue on international accounting history

Alan J. Richardson

Abstract—As firms, markets and regulation becomes global in scope, we need to understand cultures other than our own and the factors that shape the pattern of transnational development. This special issue of *Accounting and Business Research* includes examples of work in international accounting history that can provide insights into the international development of accounting practice and institutions. The papers include an examination of the linkages between the international business and political science literatures and accounting history (Richardson and MacDonald), a genealogy of the Niven family spanning two continents (Lee), an examination of the origins of operational auditing (Flesher and Zareski), and a history of voluntary harmonisation efforts among Nordic countries (Aisbitt).

In 1989, the Big-8 accounting firms (Big-8, 1989: 2) released a white paper on the capabilities needed for success in the profession. It was released in an atmosphere of crisis in which the senior partners of the firms tried to convince academics that the profession needed a new kind of practitioner if they were to meet the needs of clients. In the list of knowledge required of a successful practitioner, the first item was: 'An understanding of the flow of events in history and the different cultures in today's world'. The conjunction of international issues and history in this statement is significant. It reflects the authors' recognition that the globalisation of firms, markets and regulations was emerging as one of the most important trends affecting business (c.f. Giddens, 1999). It also reflects a view that, as we head into an uncertain future, the best guide we have is history.

Many of the key issues facing the accounting profession in the 21st century arise from the increasingly global markets in which accountants, accounting firms and their clients operate. These issues include:

- the global expansion and consolidation of accounting firms;
- the search for new value-added services for international clients;
- the provision of accounting education and consulting services to countries that are still in the midst of the change from planned to market economies;
- the development of financial accounting standards and standard-setting processes to meet the needs of cross-border capital market listings;
- the development of management accounting and control procedures to facilitate management decision-making in transnational firms;
- the negotiation of tax policies and treaties to

maintain national revenue streams as business increasingly is transacted by and within transnational firms.

These issues are complex and require decision-makers to appreciate the implications of practicing simultaneously in multiple institutional contexts. For example, in several European countries, lawyers undertake work that is the domain of accountants in North America. This minor fact takes on great significance as the large accounting firms try to develop consistent services across all countries in which they operate. It requires the firms to attempt to integrate several professions, each with distinct enabling legislation and professional norms, within a single firm. To be successful, the firms must understand why the division of labour among the professions occurred in the way that it did in each country, why particular rules were created, and how their organisational structure and practice can be shaped to be consistent with cultural expectations and legal norms.

In short, the firm must appreciate the history of practice rights and the cultural context that supports a particular division of labour among professions.

Culture, in one sense, is nothing more than the sedimentation of history (Kluckhohn, 1949). It is the accumulation of values, experiences and rules that have helped a society to become what it is in the present. It is also the intellectual capital that a society draws on to reform itself as it responds to new situations. Historical analysis provides insights into the path of development that a culture has embraced (David, 2000). It uses the lessons of the past to suggest the most likely way in which the future will unfold. Historical analysis also provides insights into the potentialities that exist in every culture. Among the paths not taken in histo-

ry lies the path that might yet be taken when circumstances change.

Francis Fukuyama (1989) sparked considerable controversy when he suggested that we had reached an 'end of history'. By this he meant that, in the wake of the Cold War, the great debates about how human society should be organised had been resolved: democratic rule and capitalist economies had become the end-point of mankind's progress towards a stable society. All paths were leading to this end, and now all that was left was the expansion and implementation of this ideal. If history was conceived as an account of human progress, then there is no history left to write.

Many points of attack can be made on this argument. Many post-structural theorists would argue that history has never been a linear progression of more highly evolved states; there is change but rarely progress. In this case, the identification of potential 'paths' in history can serve to prepare us for future change and to undermine current states of being that do not allow people to achieve their potential. Those on the political left would deny that the end of the Cold War is a definitive end to alternative forms of government or the organisation of economic activity. They would contend that the contradictions within current forms would eventually lead to crisis and a reformation of social institutions.

The New Historians would point out that Fukuyama (1989) was primarily concerned with political history. Even if we accepted his views, there would still be histories of 'progress' in ideas/knowledge without end, and a need to write the histories of those whose share of the 'good life' had not been realised at the 'end of history'. And the more literally minded would simply point to a current newspaper to demonstrate that history continues to unfold before our eyes (even though Fukuyama was quick to point out the 'end of history' did not mean an end of notable events; simply an end to change in the underlying social institutions).

Others trying to understand the implications of the end of the Cold War recognised that we had reached a disjuncture in our history. Theoretical models that were based on continuity or constancy had not predicted the collapse of the Soviet Union and now offered no guidance. There was a need to reconsider the alternatives that lay immanent in history (e.g., Woo-Cummings and Loriaux, 1993). The declared 'end of history' was simply a failure to see the new social forms that would emerge from within the new status quo. Zakaria (2001), writing in *Newsweek* after the tragedy of the September 11 terrorist attacks, declared an 'end of the end of history'. Once again there was a need to use the lessons of history to understand the meaning of current events and the possibilities that lie

ahead. We continue to observe change all around us and we struggle to put it in perspective and to understand its trajectory. This is no less true of accounting and business issues than it is for broader social issues.

In this issue of *Accounting and Business Research* we examine several aspects of international accounting history. These studies provide insights into the international influences on development of accounting firms, accounting standards and accounting practices. The first paper by Richardson and MacDonald provides a typology of international accounting histories as a guide to the field, and suggests that future international accounting history can draw on the international business and political science literature for guidance.

Based on a review of current literature on the nation-state and transnational firms, the authors identify several ways in which accounting historians can contribute to our understanding of global issues. Importantly, this paper suggests that accounting historians have two roles to play: to contribute as experts on financial issues to the international business literature, and to use the concepts and questions in the international business literature to guide our exploration of accounting issues.

The second paper by Lee focuses on the history of two generations of the Niven family; one generation who pioneered professional accounting in Scotland and a second generation who helped to develop the profession in the US. The paper demonstrates how both the Scottish culture and the Niven family background supported the development of accounting expertise and the move from Scotland in search of better opportunities for the family. The paper also demonstrates the Niven family's contribution to the early development of the US accounting profession. The transfer of personnel from one country to another continues to be an important source of technology transfer and institutional development in accounting. Lee's paper provides insights into an early example of this process.

The third paper by Flesher examines the development of value-for-money or operational auditing. Flesher shows that the concepts and practices underlying operational audits have been developed by different professions and independently in different countries. The paper illustrates some of the barriers that exist between 'epistemic communities' (e.g., the management consulting and auditing professions) and the limits of the diffusion of innovations across national boundaries.

The final paper by Aisbitt examines the attempt by the Nordic countries to achieve voluntary harmonisation of financial reporting standards. This study is of interest both for its insights into the harmonisation process and the way that this process

became overwhelmed by broader international events. The initial harmonisation process began with high hopes based on the common reliance of the Nordic countries on German legislation and scholarship, and the similarities of their economies. The harmonisation process began to unravel as country specific economic events occurred (e.g., the discovery of oil in Norway) and by the emergence and expansion of the European Union.

The creation of International Accounting Standards also provided an alternative basis and broader base for harmonisation. Ultimately this is a history of the failure of voluntary harmonisation but in the context of the success of broader trends towards harmonisation.

These papers provide some specific examples of the types of studies that are needed to support a new global perspective by accountants on their profession. The historical perspective provides practitioners and academics with a sense of the constancy of change and the impact of broader social forces on their craft, and a sense of membership in a community of practice and set of traditions. The international perspective reminds us that the set of forces impacting on accounting is ever widening and sensitises us to the alternative worldviews within which people in other cultures

work. International accounting history can provide academics and practitioners with a nuanced understanding of how globalisation has affected, and will continue to affect, the development of accounting thought and practice. It can open our minds to alternative possibilities and help us to develop the tolerance and sensitivity to react constructively to differences. International accounting history can provide a strategic overview of how the field has developed, and what may lie ahead.

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Linking international business theory to accounting history: implications of the international evolution of the state and the firm for accounting history research

Alan J. Richardson and Laura D. MacDonald*

Abstract—Accounting is an interdisciplinary subject. We routinely draw insights and models from the base disciplines (e.g. economics, psychology etc.) as a starting point for research on accounting issues. As accounting researchers, and accounting historians in particular, explore the international dimensions of accounting it is appropriate, therefore, to look to the literature on international relations for insights. This paper provides examples of how we could use the literature on the nation-state and international enterprises to frame questions about international accounting history.

1. Introduction

History is always written wrong and so always needs to be rewritten.

(George Santayana, 1905)

Every generation must rewrite history according to their problems and aspirations. For our generation one of our key problems and aspirations is globalisation. We have seen remarkable changes in the ease of communication and transportation that have enabled the development of global product and capital markets. We have also seen environmental and social problems emerge that require a global response. So this generation looks to the international arena with hope for material and social progress but also with concern that our ability to use resources on a global scale may not be matched by our ability to manage resources on that scale.

Every aspect of our lives will be affected by international issues – even such mundane practices as accounting. Over the last 25 years great strides have been made in creating and implementing international accounting standards. Recently, the International Organization of Securities

Commissions (IOSCO) has recommended to its members that the International Accounting Standards Committee (IASC, now the International Accounting Standards Board) core standards be adopted by its members for cross-border stock exchange listings. We have also seen several major steps to encourage national standard-setters to consider international issues. For example, the US National Securities Markets Improvement Act (1996) Section 509 directed the Securities and Exchange Commission to encourage international standards and the Canadian Task Force on Standard-Setting recommended that Canadian GAAP be harmonised with US GAAP. Accountants have accepted that as business internationalises so must their knowledge and practices.

The impact of internationalisation will also be seen in accounting history. In part, this is driven by our need to understand new trading partners and new perspectives on accounting. In 1989 the Big-8 accounting firms (Big-8, 1989: 2) released a white paper on the capabilities needed for success in the profession. The first item in the list of knowledge required of a successful practitioner was: 'An understanding of the flow of events in history and the different cultures in today's world.' The conjunction of international issues and history in this statement is not coincidental. One of the strengths of an historical perspective is its ability to put things in context and to explain how we got to where we are.

An historical approach is particularly important in times of discontinuity. Ahistorical models that assume that events lead to an equilibrium state, or that development is linear, could not predict the timing of the collapse of the Soviet Union or the

*The authors are at the School of Business, Queen's University, Kingston and the School of Business and Economics, Wilfrid Laurier University Waterloo, respectively. The research was supported by the CGA Ontario International Business Research Centre at Queen's University. An earlier version of this paper was prepared for the plenary session of the Drexel University International Accounting History Research Conference, August 2000. The authors are grateful for the comments of participants in this session and David De Tomasi.

creation of the European Union. These discontinuities encouraged political scientists to reconsider the history leading to those events in order to better understand them (Thelen and Steinmo, 1992; Woo-Cummings and Loriaux, 1993). In an accounting context, Previts and Robinson (1996: 173) suggest 'that which appeared abrupt or discontinuous can now be viewed from a lengthier vantage point of historical deliberation' in order to identify the broader causes of change.

Accounting is an interdisciplinary subject. Most of our theoretical understanding of accounting is based on insights from such fields as economics, statistics, psychology and sociology. Adopting an interdisciplinary approach through the use of the insights of international business and political science will also help our understanding of the international dimensions of accounting. The models and questions that inform analyses in these disciplines will provide a starting point for accounting researchers concerned with the impact of globalisation on accounting. It is not our intent to provide a thorough analysis of the potential insights that these fields have to offer accounting historians. We will limit ourselves to two examples.

We will begin by examining the role of the state in international affairs. The nation-state has been at the centre-point of political economy for most of the last 300 years. There is growing evidence, however, that the age of the state is waning. It has been said that the state is being 'hollowed out' from above and below (e.g., Rosenau, 1997). At the international level, power is exercised by a diverse group of organisations and networks of such organisations. The action of transnational organisations occurs outside of the 'rule of law' adopted in most developed countries. The changing nature of global governance has given a new set of actors influence on accounting standards and practice. Within nation-states too there is a new constellation of actors with significant influence. There is evidence of a new nationalism focussed on ethnic groups; for example the reconstitution of Eastern Europe after the dissolution of the USSR or pressures for the devolution of governance (e.g. Scotland and Wales within the UK). Both transnational and sub-national issues and processes will have an impact on accounting.

Our second example concerns the evolution of 'cross-border' firms. We use the generic term 'cross-border' because the form that these activities takes has evolved¹ over time and the terms that we use to describe such businesses – international, multinational, transnational – have specific meanings within the international business literature. The change in the nature of cross-border firms reflects the changing nature of the international business environment. We use the evolution in cross-border firms and the co-evolution of these

firms and the nation-state to identify the changing demand for accounting information and to link these changes to the evolution in accounting standard setting.

In each of these two examples historical research can be informed by and inform the disciplinary perspectives of international business and international relations. At the risk of 'present-mindedness'² (Bricker and Previts, 1994), historical research can help us to understand the factors that have led to current phenomenon. Perhaps more importantly, however, historical research can also remind us of the paths not taken and thereby undermine perceptions of the 'inevitableness' of what has actually occurred. History allows us to understand the alternatives that have been discarded but which may still have value; it allows us to anticipate what may emerge if current experiments fail. History also allows us to understand the constellation of forces that enabled a given state of being to emerge; this allows us to anticipate when change will occur as the underlying forces change.

2. The state and accounting

International accounting and international accounting history are very much nation-centred research traditions. Researchers use political boundaries to establish group identities and explore differences in accounting phenomenon between these groups. In this section we will develop a typology of accounting histories to illustrate the range of studies that are undertaken and to demonstrate the key role that the nation-state plays in these studies. We will then review research that suggests some limitations of the concept of the nation-state as an organising principle in international relations. We will also use this literature to identify research opportunities for accounting historians.

International accounting history can be categorised into one of four generic forms (see Table 1).³ Type 1 studies are limited to a particular country. Any study of accounting phenomenon outside of the home country of the reader is international from the reader's perspective. Even studies of US accounting phenomenon are international from the perspective of non-US readers. If there is an international dimension at all to these studies, it is limited to recognising that the same phenomenon has

¹ We use the term evolution simply as shorthand for a series of structural changes. We do not imply that these changes represent progress or the creation of more 'advanced' forms of organisation.

² Present-mindedness refers to the tendency to look at history as if the context of events was the same as today.

³ Prather and Rueschhoff (1996) use a similar four-way classification consisting of 'universal, international business, comparative, country'. Carnegie and Napier (2000) suggest that international accounting history can be divided into 'synchronic', 'parallel' and 'diffusion' studies.

Table 1
Forms of international history

<i>Type</i>	<i>Characteristics</i>	<i>Example</i>	<i>Subject matter</i>	<i>International dimension</i>
I Country specific studies	Limited to a particular political jurisdiction; implicit comparison with other jurisdictions	Baskerville (1999)	An oral history of the failure of current cost accounting in New Zealand	By reference to similar studies in UK and Australia
II Comparative studies (Archaeological studies)	Explicit comparison of two or more political jurisdictions	Hay (1993)	A study of the convergence of internal control standards in the UK, USA, Australia and New Zealand	Identifies factors within each jurisdiction and connections between jurisdictions
III Genealogical studies	Exploration of causal links between two or more political jurisdictions	Zaid (2000)	Links Islamic accounting to Italian accounting	By logical similarities between methods and trade links
IV Transnational studies	Exploration of accounting beyond political jurisdictions	Parker (1989)	Explores the role of medieval Jewish traders as change agents for accounting	Identifies the characteristics of traders that makes them effective change agents across political borders

occurred in other jurisdictions. Baskerville (1999) provides an example of this type of study with her oral history of the failure of current cost accounting in New Zealand. Although she does not explicitly compare the New Zealand case to other jurisdictions, she references prior work on the subject in the UK and Australia as a way of providing an interpretative context for her work.

Type I studies can form the basis for understanding accounting phenomenon across countries. An interested reader may be able to compare several country specific studies on a topic and develop an international perspective. Walton (1995), for example, facilitated this type of analysis with his collection of accounting histories across 13 European countries. The key limitation of this type of study from an international perspective is that each country-specific study may approach the subject with different theoretical or methodological approaches making comparison difficult. In quantitative studies, techniques of meta-analysis have been developed that allow the matrix of correlation coefficients from different studies to be combined to generate more powerful statistical tests (e.g., Wolf, 1986). This type of analysis is more challenging where the data and analysis are qualitative.

Type II studies deal with multiple jurisdictions within a single research design. The intent of these studies is typically to identify either common or differentiating factors between countries. For ex-

ample, Hay (1993) examines the evolution of internal control standards in four English-speaking countries. His intent is to gain an understanding of why internal control standards have converged and to explore the different paths that evolution took within each country. In this type of study the countries are treated as independent cases. The author does not explicitly assume or theorise a causal connection between the cases.

These types of studies are essentially 'archaeological' in that they attempt to make sense of potentially independent events that happen to reside in the same layer of time (Hopwood, 1987). Carnegie and Napier (2000) suggest two variants of this type of study. They differentiate between 'synchronic' and 'parallel' (although the title 'diachronic' rather than 'parallel' may be more consistent with their linguistic metaphor) studies. Synchronic studies deal with comparisons at a particular point in time while parallel studies deal with comparisons over a period of time. In each case, the key methodological characteristic is that studies of this type do not assume that there is a causal connection between events in the cases analysed.

Type III studies may be characterised as genealogical. These studies explicitly theorise a link between accounting phenomenon in different countries and explore this linkage. Walton (1986) provides an example of this type of study with his analysis of the effect of the UK on accounting

standards in Commonwealth countries (see also Briston and Kedslie, 1997). Zaid (2000) provides a more recent example. He accepts the claim in prior literature that the 'Italian method' of book-keeping was derived from Islamic practices. He then explores the source of Islamic book-keeping and its structure. He argues that Islamic book-keeping was historically prior to and substantively similar to the Italian method. Carnegie and Napier (2000) refer to this type of research as the study of accounting 'diffusion'.

Type IV studies move beyond the boundaries of any single state or set of states to consider accounting phenomenon as transnational phenomenon. This type of study is rare⁴ but Parker (1989) provides an example with his study of Medieval Jewish traders. He argues that the Jewish traders provided the link between different cultures (particularly the Christian and Moor religions) and provided the mechanism by which accounting knowledge was transferred. Parker's study is complementary to Zaid's (2000) analysis but was not cited by him. This class of study deals with non-state bases for identifying groups or with phenomenon in which states are actors rather than the context for action.

The categorisation of international accounting history studies given above is consistent with other typologies of international accounting (e.g., Prather and Rueschhoff, 1996) and international accounting history (e.g., Carnegie and Napier, 2000). Each category of these typologies takes the nation-state as a common point of reference. Carnegie and Napier (2000), for example, suggest that 'national boundaries do not merely provide a convenient way of demarcating a research study, but they are also, more metaphorically, means by which groups define themselves as different from others'. But is this the most appropriate anchor for our studies?

There is a great theoretical divide in the literature on international relations. The dominant stream of research has been described as neo-realist (e.g. Bayliss and Smith, 1999; Keohane and Nye, 1989). The key actors at the international level from this point of view are sovereign nation-states. The relationships between states are seen as anarchic (i.e. there is no superior authority) and driven by self-interest. Within this theoretical tradition, accounting has no place. Accounting, like other institutions, are just epi-phenomenon that can be fully explained by the actions of states. Furthermore, there is no place for history as a record of unique events or as a set of path-dependent events

(David, 2000). Neo-realism is based on a positivist epistemology. The main aim of neo-realism is to develop empirical generalisations that apply regardless of time or place. While historical data may be used in neo-realist studies, this is simply to generate a sample of observations from which generalisations may be derived or upon which theory may be tested.

On the other side of the divide in the international relations literature is neo-liberalism, or neo-institutionalism. This tradition sees states as one class of actors embedded within civil society. Both domestic and international forces and the institutions that reflect these forces affect international relations. Within neo-institutionalism, accounting would be regarded as an independent institution affected by and affecting international relations. Accounting standards are part of the normative social order that helps to constitute social relations. Institutionalists also see an important role for historical analysis, since the choices that international actors make are conditioned on the set of alternatives available at any point in history and actors' preference functions may be shaped by the institutional environment.

Neo-institutionalist scholars have also questioned the use of the nation-state as an organising principle on empirical grounds. First, from an historical point of view, it is important to recognise that the nation-state is a temporally and geographically specific form of political organisation. Moreover, the nation state is only one of a number of alternative ways of organising. Spruyt (1994), for example, notes that until the 14th century political order was based on feudalism, imperialism and theocracy. As these modes of order began to unravel a number of alternatives arose including city-states, city-leagues and sovereign territorial states. Spruyt (1994) argues that territorial states gained supremacy in Europe because of their relative efficiency in preventing defections, reducing internal transaction costs and making credible commitments in negotiating with other powers. The territorial state and rational government also proved to be an efficient vehicle for extracting the taxes necessary to maintain a standing army and to wage war (Rasler and Thomson, 1985). This set of capabilities allowed the European states to colonise large areas of the globe and thus spread of the nation-state as a principle of political organisation throughout the world.

In spite of the historic rise of the nation-state as an organising device, March and Olsen (1998) query the theoretical status of the concept when national boundaries are subject to frequent challenge and rearrangement. Can we use the nation-state as an organising principle for accounting history research if the referent to the labels given to different states changes over time? At a mini-

⁴ Prather and Rueschhoff (1996) use a 'universal' category that includes studies of accounting knowledge as part of international accounting. While intellectual histories may be 'transnational', I am particularly concerned with history as a reflection of human experience rather than the history of abstract concepts.

mum when we use the nation-state as a reference point, we must clearly specify the geographic area and time period to which the name applies.

Although political economy has focussed on the state and its exercise of power over the last 300 years, there is evidence that the state is declining in importance (Slaughter, 1997; Strange, 1996). Many of the most important international phenomenon of recent years such as monetary crises, the rise of the Internet and the globalisation of production, have occurred outside of the control of nation states. Susan Strange (1996) has argued that international political economy is driven by four factors: security, credit, knowledge and production. Of these four factors, the nation state is only a dominant factor in security. Even with regard to security, most nation states must rely on joint action in order to provide for the security of their citizens. In each of the other areas, non-state authorities have demonstrably more influence on the global system than any sovereign government.

In spite of the decline of the state, there appears simultaneously to be a rise in global governance, i.e., in the development of regulatory apparatus to ensure peace and economic prosperity on the global level (Keohane, 1998). This is based on two phenomena. On the one-hand, within the state there is evidence of renewed community activism based on ethnic, religious and issue specific solidarity (Giddens, 2000). These bases for organised action reach across national boundaries. On the other hand, at the international level, intergovernmental organisations are being created to manage a wide range of functions (Murphy, 1994). The commonality between the experiments in governance, observed between feudalism and the rise of the nation-state and the current trend towards transnational governance, may be the necessity to realign political and economic geography in the face of changing patterns of commerce (Reinicke, 1998).

Arjun Appadurai (1996: 19, 23) responds to these trends by declaring that

‘...[T]he very epoch of the nation-state is near its end...It may well be that the emergent post-national order proves not to be a system of homogeneous units (as with the current system of nation-states) but a system based on relations between heterogeneous units (some social movements, some interest groups, some professional bodies, some non-governmental organisations, some armed constabularies, some judicial bodies).’

Slaughter (1997: 185) suggests that the state is not in reality disappearing but simply disaggregating. Rather than relying on state-to-state treaties to achieve a new world order, such an order is emerging through dense functional networks such

as the Basle Committee of Central Bankers, the International Association of Insurance Superintendents and other inter-governmental organisations (IGOs). In addition, there are also an increasing number of non-governmental organisations (NGOs) that play a crucial role in international governance. We would include current international accounting standard-setting bodies among these types of institutions.

Along side these organisations is the phalanx of technical experts necessary to support and implement the policy agendas of the IGOs and NGOs. With the rise of scientific rationalism, many fields of knowledge have become standardised. This results in the training of professionals who share a common causal understanding and, often, common values. These individuals may have greater allegiance to their disciplines than to any territorial state. They are geographically mobile and concerned with the advancement of their field rather than political interests. These groups have been referred to as epistemic communities, which Haas (1992:3) defines as:

‘...[N]etwork of professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge within that domain.’

Epistemic communities achieve particular power where uncertainty prevents political actors from recognising interests and defining alternatives. In these situations a transnational perspective on issues may arise through communication and consensus among the epistemic community rather than power politics among states (Adler and Haas, 1992).

The ‘hollowing out of the state’, i.e. the reassignment of some powers to sub-national units and of other powers to transnational units, leaves open the interesting question of the relationship between the domestic and international policy arenas (e.g., Rosenau, 1997; Putnam, 1988). Martin (1999) suggests that the two levels may act as either complements or substitutes with very different effects on international relations. If domestic and international institutions act as substitutes, then international institutions will form where domestic capacity is limited. The effect will thus be to provide a mechanism for harmonisation of diverse policy possibilities. If domestic and international institutions are complements, then international institutions will serve to aggregate nations with similar policies and exaggerate these policies compared to other excluded from the group.

So what does all this mean for accounting history? We see four main implications. First, there is a role for accounting historians in these debates as technical experts in accounting. The new institutionalism in the international relations literature

has argued that the choice among alternative governing mechanisms is based on the logic of transaction cost minimisation (among other possibilities). Accounting historians may have a comparative advantage in addressing these claims empirically by virtue of their more sophisticated understanding of cost records. The challenge is for accounting historians to move beyond histories of accounting to using accounting in historical research.

Second, the history of accounting could be tied more explicitly to the history of governance mechanisms. The accounting history literature has used a variety of governance mechanisms as contextual variables. For example, Walton (1986) and Johnson and Caygill (1977) focus on the spread of accounting principles and professional institutions, respectively within the British Commonwealth and Annisette (2000) is concerned with the impact of imperialism on the development of accounting in Trinidad and Tobago. It is also possible however to reverse field and ground in such studies and explore the role of accounting in facilitating such governance mechanisms. For example, Armstrong (1987) demonstrates the role of the accounting profession with its 'pre-existing position of power within the global function of capital' to influence the adoption of audit requirements and internal control systems (see also Miller and Rose, 1990; Neu, 1999).

Third, the 'hollowing out of the state' implies that there may be connections between domestic and international policy. In particular we believe that the characterisation of this relationship as one of complements or substitutes (Martin, 1999) provides a way of understanding variation in reaction to international accounting standards and in the degree of adoption of international accounting standards within domestic economies.

Finally, the relationship between accounting and the diverse forms of non-state governance that are currently emerging deserves careful study. For example, a key actor in current monetary regulation is the international monetary fund. The IMF routinely imposes financial reporting and accounting institution developments as a condition of their loans. We have yet to see analyses of the evolution and consequences of these conditions. It would also be useful to develop the history of accountants as an epistemic community. Following Boddewyn et al. (1986) and Cooper (2000), we might also suggest that accounting firms be brought back into this form of accounting history. What role have the firms played in creating a transnational accounting culture? How and to what extent has the profession developed common policy concerns? Is there evidence of transnational linkages between accountants over time, and what consequence has this had?

3. Cross-border business and accounting practices

One alternative to focussing on the nation-state in accounting history is to focus on the firm. Parker and Nobes (1988), for example, use the multinational enterprise as the focus for their book on international accounting.⁵ As with the nation-state, however, the firm as an empirical entity and the theory of the firm in international business have undergone changes. These changes affect the internal demand for accounting information by these firms as well as the firm's interaction with national regulators on accounting issues.

Unlike the case of the nation-state, there is not a well-developed literature on the history of accounting from the perspective of cross-border firms. There are three main reasons for this absence. This may be due to the more recent appearance of such firms and, consequently, the phenomenon may not have entered the accounting historians' temporal range of focus (see Bhimani, 1999 for a review of recent international comparisons of management control systems).

Also, much accounting history has focussed on the problems of capital and place intensive industries such as railroads, cotton mills, and manufacturing plants. This focus tends to emphasise the local at the expense of the cosmopolitan. This focus may be influenced by the availability of archives; cross-border activities may not leave the same historical residue as local activities. Finally, accounting history has not yet developed a strong strategic focus that would direct the historian to look at how accounting has facilitated or impeded the internationalisation process.

The international business literature has recognised the changing nature of how firms do business around the world (Bartlett and Ghoshal, 1998). Initially firms tended to operate as international businesses. An international business is simply a domestic firm that exports goods or services across political borders. As communications and transportation systems improved, firms began to operate as multinationals (Perlmutter, 1969). A multinational firm operates in two or more political jurisdictions by creating production facilities in each jurisdiction to meet local market needs. In these firms there is typically some centralisation of management functions such as financial reporting, treasury functions and advertising. The current emanation of international business is the transnational enterprise (United Nations, 1984). The transnational firm disaggregates its value chain and locates intermediate production in whatever political jurisdiction offers the best conditions for

⁵ Nobes and Parker (1991), however, continue to use a country-centred approach to explaining differences in financial reporting practices.

that stage of production (e.g., Cecco, 1993).

Parker and Nobes (1988) propose a similar three-fold classification of multinational firms distinguishing between resource-seeking, market-seeking and efficiency-seeking versions of international businesses. The resource-seeking firm typically establishes overseas operations in order to secure supplies of resources that are shipped to the 'home' country for processing. Although this is not explicitly mentioned by Parker and Nobes (1988), presumably there may also be a flow of finished goods back to the resource-rich countries. The market-seeking firm, they suggest, creates subsidiaries as a substitute for importing the goods from other countries. The efficiency-seeking firm, Parker and Nobes (1988:3–4) describe as one that organises subsidiaries by product or process to produce at lowest cost.

Melin (1992) has argued that the international business literature has developed a useful typology of operating structures of firms, but has been less successful in identifying the processes that lead a firm to change from one structure to another. It might also be said that these models are lacking a sense of the processes that are necessary to maintain those structures on a day-to-day basis (cf. Forsgren, 1992). For example, the effect of these alternative structures on the demand for and use of accounting information is dealt with only tangentially by the leading authors.

Barlett and Ghoshal (1998: 75), for example, note that the change in operations involves changing the configuration of assets and the flow of knowledge within firms. In the multinational firm, assets and knowledge are anchored within each national subsidiary allowing for stand-alone information systems. In the transnational firm, however, assets are dispersed but specialised and functionally interdependent, requiring an information system that is capable of integrating operations across borders. The disaggregation of the value-chain by transnational firms requires better information about the costs of individual processes and the opportunity costs of alternative locations and scales of production. The firm, for example, may use an internal bidding process for the supply of components that provides the central office with price signals of the capabilities and efficiencies of individual units. This process requires the detailed costing capabilities at the local level and extensive integration abilities at the centre.

Bartlett and Ghoshal (1998: 329–334) suggest that as firms move from multinational, through international to transnational operations their information processes move from centralised, to formalised decentralisation to socialisation. The last stage, socialisation, implies the creation of an open information culture based on mutual understanding and dense informal networks.

The dominance of 'process' models of internationalisation within the international business literature lends itself to historical analysis. There is a business history literature that examines the changing management processes associated with international operations (e.g. see the inaugural issue of *Enterprise and Society* that focuses on the international automobile industry). By contrast, the management accounting history literature has tended to focus on industries operating within national boundaries or on accounting at specific locations within a company that operates internationally. The international business literature can help to specify broad structural characteristics of firms in order to identify their stage of international development, allowing accounting historians to identify and aggregate companies for research. The accounting historian can examine the role of the accounting system in allowing each strategy/structure combination to be implemented, and the role of the accounting system in aiding or impeding change between structures (c.f., Bhimani, 1999).

The firm and the nation-state have co-evolved (Nelson, 1995; Lewin et al., 1999; Braithwaite and Drahos, 2000); that is, the structure of the firm is dependent on the institutions within which it operates and the activities of cross-border firms create demands for political organisation. For example, with regard to the influence of the state on cross-border firms, it has been argued that the mode of entry into foreign markets is dependent on such things as tariff barriers, patent protection and regulations on foreign ownership. At the same time, however, the cross-border firms can create the need for and shape the content of domestic regulations (e.g., Porter, 1990).

The cross-border firm has also been used as a tool for mercantilist and imperialist policies of the nation-state. The Hudson Bay Company (e.g., Sprackman and Wilkie, 2000), and Northwest Company in Canada, the Dutch East India Company (e.g., Moore and Gaffikin, 1994) and the UK East India Company (e.g., Buchan, 1994) were chartered to allow private interests to exploit territories to which a nation-state laid claim. These firms became the visible presence of the distant sovereign in the colonies and provided the stream of revenues that justified maintaining this territorial claim. The system of administration imposed on the colonies became inextricably tied to the experiences of these firms. Initially the firms were given a free hand to manage the colonies by contract but as competition from other nations began to impinge on their profits, the nation-state was encouraged to adopt a policy of imperialism and extend military and bureaucratic control over the colonies (Hobson, 1902).

It is not surprising, then, that accounting has also

witnessed changes parallel to the evolution of the cross-border firm. Financial accounting acts as the point of contact between the nation-state and the cross-border firm. It provides an important component of the information set by which the nation-state may evaluate the impact of the firm on the state (e.g., Tinker, 1980) and it becomes the basis for taxation. As firms move from multinational to transnational forms, there arise greater possibilities for shifting income around the world to avoid or reduce the firm's tax liabilities. The nation-state has responded to this possibility by creating 'arm's length rules' for valuing intra-company flows of goods and services (e.g., Elliot, 1998; Eden et al., 2001).

The interaction between the firm and nation-state can also be seen in the evolving structure of international accounting standards. Some of the early work on the classification of accounting standards in different countries noted that clusters of countries could be identified based on the country that colonised that part of the world. For example, Nair and Frank (1980) identified four clusters of countries with similar accounting practices: a British Commonwealth cluster, a Latin America cluster, a continental European cluster and a US cluster. Similarly, the American Accounting Association (1977: 129–130) Committee on International Accounting suggested that the differences in accounting practice could be explained by the existence of 'zones of influence' consisting of British, Franco-Spanish-Portuguese, Germanic-Dutch, US and communist zones. While trade and investment followed colonial patterns, this structure of international accounting standards worked reasonably well (cf. Ronen and Shankar, 1985).

By the mid-1970s, the pattern of trade, investment and accounting standards were changing. Researchers attempted to capture these changing antecedents by broadening the set of variables used in classification studies. Nobes (1992), for example, proposes a classification system that uses such variables as the nature of the legal system, extent of development of capital markets, forms of business organisations in a country and use of accounting for taxation and macroeconomic planning. The dissolution of the home country effect over time is coincident with the liberalisation of trade practices and the changing nature of the firm. It is reasonable to hypothesise that firms were acting as change agents and media of technology (i.e., accounting practices) transfer between countries.

The response of international standard-setters is consistent with the patterns noted above. The birth of the International Accounting Standards Committee (IASC) was, in part, recognition of the national differentiation of accounting standards and the perceived need to achieve some form of harmonisation between systems. The initial ap-

proach was to establish a baseline set of practices and a set of defined alternatives. More recently, as international capital flows have increased, the IASC has moved away from the baseline-and-alternatives approach to simply identifying one preferred approach. Member countries were expected to harmonise their practices with the IASC standards. The latest incarnation of the IASC, renamed the International Accounting Standards Board (IASB), takes international accounting standards to the transnational level. The IASB has now moved beyond calling for *harmonisation* among national standards to calling for *standardisation* of national standards.

The underlying forces of this change in standard-setting approach are subject to debate. The official rationale is that standardisation reduces the transaction costs absorbed by investors in analysing financial statements. This, it is claimed, should result in a lower cost of capital, more liquid markets and a more efficient global allocation of capital. Marxist scholars would argue that the move to the standardisation of international accounting standards reflects the extension of capitalism into new economies and the commodification of ever-increasing aspects of life (e.g., Tinker, 1980). Others might link the expansion of international standard setting to a form of neo-colonialism or hegemony, where the values and practices that benefit one group are accepted by the subordinate group as being in their self-interest (e.g., Hoarau, 1995).

We see three implications of the international business literature on the firm for accounting historians. First, there is a need to examine the relationship between cross-border firms and both national and transnational systems of accounting and accountability. This must be done without favouring one level of analysis over another. It is an empirical matter which way causation operates in a given instance. If we take seriously the contention that the nation state and the transnational firm are co-evolving, then we should be able to document the impact of the changing needs of the firm on the regulatory capacity of the state (and vice versa). Arnold and Sikka (2001) provide an excellent example of this type of study with their examination of the regulatory environment surrounding the collapse of the Bank of Credit and Commerce International.

Second, cross-border firms are important vehicles for the transfer of technology, i.e. accounting techniques, between regions. The early attempts to classify accounting practice reflected trade-flows between colonial powers and their respective colonies. The transfer of these practices was accomplished by a number of mechanisms including the creation of institutions in the colonies mirroring the home country, the exportation of educa-

tional systems and materials, and the operation of home country firms in the colonies. The gradual dissolution of the home country effect documented in replications of classification studies is consistent with the liberalisation of trade flows and exposure to other accounting systems. In other words, firms have become important vehicles for the transfer of technology between countries, including accounting technologies. If this view is correct, we should be able to document the effect of transnational companies on a country's accounting practice.

Third, the evolution of companies from international to transnational modes of operation should be paralleled by the evolution of accounting systems. Longitudinal studies within companies may provide evidence on the link between strategy and the design of accounting systems. Cross-sectional studies at different points of time in the evolution of the population of cross-border firms may provide similar insights.

4. Conclusion: accounting history in an international context

Accounting is an interdisciplinary field. We have drawn on other disciplines for models and theories that enrich our interpretation of accounting phenomenon and to suggest as yet unrealised implications. As accountants explore the impact of international issues on accounting (and vice versa), it is important that accountants draw on the rich literature in international relations and international business to inform their work. Prather and Rueschhoff (1996) note the international accounting research published in the US has shown a marked increase in theory development since the late 1980s. They further note that the use of historical methods has declined implying that theory and history were in some sense mutually exclusive categories. As the vigorous debate regarding the nature of cost accounting in the industrial revolution demonstrates (e.g., Fleischman, 2000), nothing could be further from the truth.

In this article we have given a brief review of two strands of the international relations/business literature. We have shown how the debates regarding the evolution of the nation-state and the evolution of cross-border firms raise new questions for accounting history. The literature on the nation-state makes clear that this is a geographically and temporally specific form of political organisation. Other forms of organisation have existed and current analysis suggests that the era of the nation-state may be waning. The former observation, particularly from the perspective of the new institutionalism, suggests an opportunity for accountants to contribute to the debate in the international relations field with analyses of the relative costs of

alternative organisational forms. This is a call to move from simply doing histories of accounting to using accounting in historical research. The later observation suggests the need for accounting historians to use a unit of analysis other than the nation-state in their research. For example, accounting history researchers could examine the development and consequences of accounting as an epistemic community or explore the effect of accounting on transnational institutions (and vice versa). A good candidate for the later type of study would be to develop an historical understanding of the role of accounting institutions in the policies of the International Monetary Fund and World Bank.

The literature on cross-border firms has documented the emergence of new organisational forms to exploit differences in local labour, capital and product markets. Accounting historians can contribute to our understanding of this phenomenon by examining the role of accounting in the process of internationalisation. Accounting has changed to meet the needs of new organisational forms, but it also provides the capabilities on which those new organisational forms are built. We need to better understand this reciprocal relationship and in doing so embed accounting history in our understanding of corporate strategy. Accounting historians can also provide insights into the reciprocal relationship between the nation-state and the firm. The nation state has used companies as vehicles for carrying international policy and has used accounting to 'construct governable people' (Miller and O'Leary, 1989). We need to better understand the changing use of accounting in the relationship between the state and firm.

Although this paper cannot do justice to the richness of the political science and international business literatures, we have shown some of the possibilities that exploring this literature can open for accounting historians and accounting researchers in general. Accounting historians have much to contribute to our understanding of the process of change and innovation in accounting and nowhere is the pace of change and the need for understanding greater than in the international arena.

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The contributions of Alexander Thomas Niven and John Ballantine Niven to the international history of modern public accountancy

T. A. Lee*

Abstract—This study examines the historical contributions to public accountancy of two Scottish Chartered Accountants. Alexander Thomas Niven was a charter member of the Society of Accountants in Edinburgh in 1854, and founded the Scottish public accountancy firm of A T Niven and Company in 1859. His son, John Ballantine Niven, became a Society member in 1893, co-founded the American public accountancy firm of Touche, Niven and Company in 1900, and was elected President of the American Institute of Accountants in 1924. The professional careers of both men are analysed in the context of a researched genealogy of the Niven family over two centuries in Scotland and the US. The analysis reveals the potential impact of successive generations of the Niven family in Scotland on the professional careers of Alexander Thomas Niven and John Ballantine Niven, and the significance of the latter's emigration to the development of the American profession. The historical contributions of both men are discussed within the context of specific economic and social factors over a considerable period of time. The conclusions of the study are that each Niven career was more than the sum of the events of a defined lifetime, and that the transfer of public accountancy knowledge through the emigration of John Ballantine Niven was a vital ingredient in the maturation of the American profession.

1. Introduction

There is an obituary notice for a Scottish chartered accountant in *The Accountant's Magazine* of May 1918, p. 206. The chartered accountant who had died was Alexander Thomas Niven (ATN):

'The Edinburgh Society mourns the loss of its most venerable member, Mr A. T. Niven, whose death took place, as intimated in last month's *Magazine*, on 19th March. He had attained a great age, and was the last survivor from among those who originated and formed the Society of Accountants in Edinburgh, which was incorporated by Royal Charter in 1854. In the course of his lengthened career he had an extensive professional practice, and held many important appointments, honorary and otherwise.'

The notice goes on to describe ATN's many connections with the Church of Scotland. It ends by stating that his only son, John Ballantine Niven

(JBN), was also an Edinburgh chartered accountant and a partner in the New York public accountancy firm of Touche, Niven & Company (TNC). The contribution of ATN to the history of modern public accountancy is largely ignored in the obituary. Reports on his death in local newspapers of the time (e.g. *The Scotsman*) are also brief and mainly relate to ATN's religious affiliations. JBN's death in November 1954, on Long Island near New York, is reported in a similar fashion. For example, the obituary notice in *The Accountant's Magazine* of that month at page 655 contains a short description of his professional career in Scotland and the United States (US):

'Niven, John Ballantine, died at his home in New York on November 17. He was founder and, until he retired, senior partner of the firm of Touche, Niven, Bailey & Smart. He was the son of the late Alexander Thomas Niven, C.A., one of the original members of the Edinburgh Society. He was educated at George Watson's College and was admitted (Edinburgh) in 1893.

He joined Price, Waterhouse & Co. in Chicago in 1898 and left them in 1900 to found, with the late Sir George Touche, Bt., C.A., the firm of Touche, Niven & Co. in New York. In 1901 he became a Certified Public Accountant of New York by examination – later becoming a member of the American Institute of Accountants. In 1921 he was elected Vice-President of the American Institute, and three years later he became President.'

* The author is Emeritus Professor of Accountancy, University of Alabama and Honorary Professor of Accountancy, University of Dundee. Correspondence should be addressed to the author at the Department of Accountancy and Business Finance, University of Dundee DD1 4HN. Email: leeatom@aol.com. The author acknowledges the financial support of the Culverhouse Endowment of the University of Alabama and the Scottish Committee on Accounting History of the Institute of Chartered Accountants of Scotland. He has also benefited from the expertise of numerous librarians and archivists in Scotland and the US; research assistance from Katy Birchall and Ann Lee; and the kind permission of the Niven family in New York to access its files.

Other obituaries in the *Journal of Accountancy* and the *New York Herald Tribune* provide little further information about JBN.

This sparse reporting is frustrating for accounting historians because the Nivens are unique in the international history of modern public accountancy. ATN was one of the founders of institutionalised public accountancy in Scotland. His firm was absorbed into what is now Deloitte & Touche (Richards, 1981). JBN emigrated to the US and co-founded another constituent part of Deloitte & Touche (Richards, 1981). His co-founder, George Alexander Touche (GAT), was one of the most famous names in Anglo-American investment trust history (Murphy, 1960). JBN was also elected President of the main public accountancy body in the US. The combined professional careers of father and son span the early history of modern public accountancy on both sides of the Atlantic. Their contributions to its international history are therefore worthy of more detailed research than has appeared previously.

The purpose of this paper is to analyse the contributions of ATN and JBN to the international history of modern public accountancy. The study uses a genealogy of the Niven family over two centuries in Scotland and the US. Motivation for the study comes from a belief that the significance of individual contributions to accounting history can be understood through the genealogies of the contributors. ATN and JBN provide a unique opportunity to do this because of their family relationship, the timing of their professional careers, and the transfer of public accounting knowledge via emigration.

The study is based on an adaptation of the argument of Miller and Napier (1993) that accounting history should be a search for outcomes of the past rather than origins of the present. In relation to the history of accounting calculations such as double-entry book-keeping and cost accounting, they argue that historical outcomes result from a complex interplay of contextual influences over time. Such outcomes provide a basis for historical explanation as well as description. Historical origins, on the other hand, are capable of describing historical facts without explaining the impact of contextual influences. The Miller and Napier (1993) argument is made in this study to justify the use of the Niven genealogy to identify and explain the contributions of ATN and JBN to the international history of modern public accountancy. Their professional careers are reported as outcomes of several generations of family activity over decades of contextual influences, rather than as a series of isolated events in their particular careers.

The remainder of the paper reports on the Niven genealogy. The descriptions and explanations are assisted by an abbreviated family tree in the

Appendix. Archival materials range from approximately 1750 (i.e. the first observable record of the Niven family in Ayrshire in Scotland) to 1954 (i.e. when JBN died on Long Island). Individual Niven family details are also presented in the context of more general observations of Scottish and American history. The archival data have been collected from various libraries and archives in Scotland and the US. Those accessed but not specifically cited in the text are marked with an asterisk in the Bibliography. Surviving Niven family papers were also consulted and are cited throughout the study as *Niven Family Papers*.

2. From farmers and merchants to ministers

ATN and JBN were descended from a Presbyterian family of farmers and merchants located in Ayrshire by mid-18th century. Nivens lived in each of the small towns of Girvan, Kirkoswald and Maybole according to Alexander Webster's population survey of 1755 (Kyd, 1952). Robert Niven (1728–1807), for example, was a farmer's son who became a merchant and a local magistrate of Girvan. He married Agnes Stevenson, a farmer's daughter.¹ They had five children including Alexander Niven (1760–1833), a grandfather of ATN. Alexander Niven attended Hugh Rodger's parish school in Kirkoswald with his cousin, William Niven and, in 1775, the poet Robert Burns (Blackie, 1868; Lindsay, 1959).² He then attended the Universities of Glasgow and Edinburgh (1775–8) before he was appointed tutor to the sons of John Hamilton, a wealthy Ayrshire landowner. Hamilton assisted several promising Ayrshire men in their careers and was well connected to Scottish nobility (Lindsay, 1959). It is therefore reasonable to presume that he was responsible for Alexander Niven moving to Dunkeld in Perthshire in 1786 to tutor the family of John Murray, fourth Duke of Atholl.³

Alexander Niven entered the Church of Scotland ministry at Dunkeld in 1793 with the Duke of

¹ Girvan was a post-Reformation community granted privileges of trade and marketing by the Crown or a local landowner, and managed by magistrates who, until the Scottish Reform Act (1833), were typically self-elected merchants and landowners (McCaffrey, 1998). Agnes Stevenson was descended from John Stevenson, a 17th century farmer, writer and Covenanter. Covenanters were supporters of the Scottish National Covenant (1638) that declared Presbyterianism rather than Episcopacy as the national religion of Scotland (Cowan, 1976; Stevenson, 1988).

² William Niven was a miserly and wealthy merchant, banker, landowner and magistrate in Maybole. Robert Burns was the son of a poor tenant farmer near Ayr. Despite his reputation as a poet, he died as a relatively poor excise officer. His surviving letters confirm friendships with William Niven of Kirkbride and Alexander Niven of Dunkeld (Blackie, 1868; Lindsay, 1959).

Atholl as his patron. A year later, he married Susannah Stewart Dick, a daughter and widow of Perthshire landowners and military men.⁴ His importance to the careers of ATN and JBN is that his membership of one of the powerful professions of its time can be argued to have provided ATN with access to an emerging profession.⁵ Alexander Niven had connections to nobility and landowners because of his occupation, patronage and marriage. Such a reputation would have been of considerable value in the socially conscious Edinburgh of the 19th century.⁶

Alexander and Susannah Niven had seven children whose lives evidence upward social mobility in the Niven family. The eldest son was Robert William Niven, a Writer to the Signet (1817). The second son was Humphrey Donaldson Niven, an assistant surgeon with the Honorable East India Company who was killed in Bengal at the Battle of Nagpore in 1817. Several of his uncles and cousins on his mother's side of the family held military, legal and administrative positions in India at approximately that time (*Niven Family Papers*). This suggests that emigration would not have been unknown to the Niven family by the time of JBN's emigration to the US in 1898.

The third son of Alexander and Susannah Niven was Alexander Niven (1798–1872) who entered the Church of Scotland ministry after graduating from the University of St Andrews in 1817 with a Master of Arts degree.⁷ He was ordained at Balfour in Stirlingshire in 1825 under the patronage of Thomas Robert Drummond Hay, Earl of Kinnoul and Lord Lyon King of Arms.⁸ The fourth son was William Niven who was a ship's surgeon on an Honorable East India Company trading ship

to India when he drowned in its shipwreck at the Cape of Good Hope in 1822 (*Niven Family Papers*). The fifth son was John Dick Maxwell Niven who was training to be a lawyer in Edinburgh when he became blind. He remained an invalid and unemployed until his death in 1880 (*Niven Family Papers*). The youngest son was Charles Murray Niven who was ordained at Dunkeld in 1828 and replaced his father as parish minister. Alexander and Susannah Niven's only daughter, Marjory Forbes Niven, married Frederick Graham, Factor to the Duke of Atholl, in 1824.⁹ A daughter of this marriage, Susannah Dick Graham, married Hubert Manson Saft, Deputy Clerk to the Privy Council (*Niven Family Papers*).¹⁰

The careers of the six sons of the Reverend Alexander Niven of Dunkeld reflect different ways of maintaining and improving the social status of a Scottish family in the early 19th century. A conclusion can be made that the Niven family successfully translated from the 18th century occupations of farmer and merchant to the established professions of the nineteenth century. Of the six sons, however, only Alexander Niven of Balfour had issue. In 1829, he married Eliza Brown, a daughter of the Reverend Dr Thomas Brown, Minister of St John's Parish Church in Glasgow, and Eliza Duncan. Dr Brown was one of the architects of the Disruption in the Church of Scotland in 1843 and succeeded Dr Thomas Chalmers as Moderator of the General Assembly of the Free Church of Scotland.¹¹ Eliza Duncan's

³ The Murrays were a family raised to the peerage of Tullibardine in Perthshire in the 1600s (Leneman, 1986). A later marriage to the Earl of Atholl combined the two families. The immediate forebears of the fourth Duke were involved in Scottish politics as royalists and held the highest judicial positions in the nation.

⁴ Susannah Stewart Dick was a descendant of a number of Edinburgh landowners including Sir William Dick of Braid, a Lord Provost of Edinburgh in the mid-17th century, and Sir James Lochead of Inverleith.

⁵ Contemporary explanations of professions tend to regard them as occupational groupings that, despite explicit missions of public service, are essentially market service monopolies (Larson, 1977) and managers of institutionalised bodies of knowledge (Friedson, 1986). One of the most significant changes in Scottish social life in the 18th and 19th centuries was the emergence of a professional class that developed into a social hierarchy of ministers, doctors and lawyers by mid 19th century (Corfield, 1995; Smout, 1997). In addition, within the legal profession there was a hierarchy of members – in descending order, Advocates, Writers to the Signet, Solicitors of the Supreme Courts, and Writers (Corfield, 1995). Accountants, at least in Edinburgh, were a subset of the legal profession by the early 1850s because of their court-related services (Brown, 1905; Walker, 1988).

⁶ This can be illustrated in a variety of ways. For example, there is the diary edited by Gilbert (1901) of daily events in Edinburgh throughout the 19th century that includes various disasters and triumphs, but mainly deals with the social lives of prominent men and women. There is also the journal of Sir Walter Scott covering the late 1820s and early 1830s that describes fashions, meals, meetings, manners and social interests in Edinburgh during these times (Anderson, 1972).

⁷ Alexander Niven of Balfour was the first Niven to graduate with a degree from a university. In fact, most male Nivens attended university without graduating, which appears to have been a common practice in the 18th and 19th centuries.

⁸ Balfour is a small market town that prospered for several decades from 1790 as a result of the opening of a cotton mill during Scotland's industrial revolution (Smout, 1997; Whatley, 1997). The Lord Lyon King of Arms is the head of a Scottish judicial court dealing with matters of heraldry and title in Scotland.

⁹ The factor of an estate was typically a man of considerable managerial ability. He was responsible to the estate owner for running the day-to-day operations of the estate including its farms, fisheries and forests.

¹⁰ The Privy Council is a committee that provides advice and guidance in decisions that require to be made by the British monarchy. It also acts as a final court of appeal for certain British Commonwealth countries that have chosen to retain it for this purpose. The Privy Council Office is mainly concerned with the affairs of bodies operating under the incorporation of royal charter.

father was the Reverend Dr John Duncan, a founder of the Royal Society and Minister of the Scotch Church in London.¹²

3. From ministers to chartered accountants

Alexander Niven of Balfron had three sons and one daughter. The sons were ATN, Thomas Brown William Niven, and Frederick Charles Niven. Eliza Susannah Niven was his daughter. The two youngest sons continued the family tradition of Church of Scotland ministry. In 1859, Thomas Brown William Niven was ordained at Cranstoun where his patron was John William Henry Dalrymple, Earl of Stair.¹³ In 1868, Thomas Niven translated to the Tron Kirk in Glasgow then to the parishes of Linlithgow (1872) and Pollockshields (1876). He was elected Moderator of the General Assembly of the Church of Scotland in 1906. His wife was Alice Steuart, a daughter of Lieutenant-General George Mackenzie Steuart of Steuarthall, a major landowner in Stirlingshire. Thomas and Alice Niven had six children. Three of these issue emigrated – respectively to Australia, Burma and the US. This again provides evidence that emigration was known within the Niven family prior to JBN's move in 1898. Frederick Charles Niven was the youngest of Alexander Niven's three sons. He was ordained in 1874 as the Minister of North Paisley Parish Church and married the daughter of a local medical practitioner.

3.1. Alexander Thomas Niven

At the age of 14 years, ATN moved from Balfron to Edinburgh in 1844 to be an accounting apprentice to Donald Smith Peddie (*Niven Family Papers*). Peddie was the son of Dr James Peddie, a renowned Minister of the Bristo Street United Presbyterian Church in Edinburgh. Donald Smith Peddie was also related to several well-known professionals in the ministry, law, and architecture (Walker, 1996). Peddie was a charter member of the Society of Accountants in Edinburgh (SAE) in 1854. Contrary to this background, however, investigations of his professional activities in the

early 1880s revealed that he had defrauded clients, including the United Presbyterian Church, of considerable sums of money. He fled from Edinburgh in 1882 and died in the US in 1883. Thirty years earlier, Peddie had been highly regarded by the Niven family. In a letter to his father in 1846, ATN writes of his pleasure that Peddie's report on his work has received his family's approval and an increase in his contracted salary (*Niven Family Papers*).

ATN next worked for an Edinburgh accountant, Andrew Paterson, in 1849 and 1850 (*Niven Family Papers*). Paterson was admitted to the SAE in 1855, but is better known as a pioneer of the management of property investment companies in the 1860s (Stewart, 1977). Property management was a professional focus also evident in the practices of Donald Smith Peddie (Walker, 1996), Lindsay, Jamieson & Haldane (Walker, 1993),¹⁴ and ATN. This suggests that, by the third quarter of the 19th century, Edinburgh public accountants were specialising in property management and investment.¹⁵ Walker's (1993) research of Lindsay, Jamieson & Haldane provides an explanation for this development. Edinburgh public accountants were increasingly involved in the financing of property because of their management of banks and insurance companies. In addition, Edinburgh lawyers lacked the specialist professional education and expertise to provide such services effectively. More generally, and in relation to foreign investment in the US prior to World War I, Wilkins (1989) states that Edinburgh was a major centre for property investment trusts transacting in the US by the late 1860s.¹⁶ As discussed below, ATN's employment with Peddie and Paterson may have influenced him in the development of his professional practice, and more indirectly impacted the later professional career of JBN.

ATN's entry into the Edinburgh public accountancy profession appears inconsistent with the Niven family tradition of a legal, medical or ministerial career. However, as an important sub-set of the legal profession, and because of its major presence in banking, insurance and property manage-

¹¹ Thomas Chalmers was the leader of the Disruption and first Moderator of the General Assembly of the Free Church of Scotland in 1843. The Disruption was an ideological split in the established Church of Scotland that created the Free Church and left the established Church with less than two-thirds of its ministers and elders (Cheyne, 1993).

¹² The Royal Society was formed in 1660 to encourage, discuss, promote and recognise scientific research and education. The Scotch Church was the Church of Scotland's congregation in London.

¹³ The Dalrymple family had a long history of military, legal and ambassadorial service to Scotland. For example, Sir John Dalrymple was the first Earl of Stair, Lord Advocate for Scotland (1686–8), and joint Secretary of State for Scotland (1691–5).

¹⁴ According to Walker (1993), fees from landed proprietors and estate management between 1859 and 1891 amounted to 14% of Lindsay Jamieson & Haldane's total income.

¹⁵ Mid-19th century Edinburgh was a city of social inequality with many properties funded through loan companies owned by wealthy citizens including lawyers and accountants (Smout, 1997; Walker, 1996).

¹⁶ Investment trusts were the equivalent of the modern mutual fund in the US. Their managers invested the savings of individual investors in a portfolio of investments that would otherwise be difficult for the individual investor to access. Property trusts were a subset of investment trusts and specialised in investing in property or lending on the basis of security of property.

ment, public accountancy was a profession of significance in Edinburgh by 1844. ATN started to practise on his own in the New Town about 1850 and also attended law classes at the University of Edinburgh (1849–52). Between 1850 and 1859, he was, successively, Agent in Edinburgh for two insurance companies that are now part of the Phoenix Assurance Group (Trebilcock, 1998). The companies were the British Empire Mutual Life & Fire Company and the Liverpool & London Fire & Life Assurance Company.¹⁷

The Liverpool & London is relevant to this study because it was one of the major British insurance companies in the US in the second half of the 19th century (Wilkins, 1989; Trebilcock, 1998). It was also a major investor in American property during the same period (Wilkins, 1989). It is therefore reasonable to argue that ATN's employment in the Liverpool & London could have influenced his practice.¹⁸ For example, in 1867, together with 11 other subscribers (who were mainly accountants and lawyers), he founded and became Manager of the Scottish Heritable Security Company (Scottish Records Office, BT/2: 274). The objective of this company was to lend money to property developers and contractors. ATN's first apprentice, John Frederick Moffatt (1840–1921) (SAE, 1865), replaced him as Manager in 1869. Moffatt was ATN's partner from 1865 to 1869 and had strong property connections as the son of a Yorkshire architect and the relation of landowners (Stewart, 1977).

In 1877, with six other subscribers, ATN founded his second property company, the American Mortgage Company (Scottish Records Office, BT/2: 770/1). The objective of the company was to lend to property developers in North America and ATN was appointed as its first Manager. One of the other subscribers was Austin Corbin of Corbin's Bank in New York. This suggests that ATN had a business connection to the US before JBN emigrated there. Corbin sold his shares in the company in 1880, as did ATN in 1882.¹⁹ The Scottish American Mortgage Company, co-founded by William Wood (SAE, 1854), acquired the company in 1918.

The American Mortgage Company is also relevant to this study because it places ATN in events that significantly impacted the financial history of the US (Wilkins, 1989). The transformation of the American economy from agriculture to industry took place between 1875 and 1914. By the latter year, it had become the world's pre-eminent manufacturer and also its largest debtor nation as it sought foreign investment to fund its industrial expansion. These developments also involved the creation of monopolistic 'trusts' by the combination of several large companies in the same industry (e.g. United States Steel, General Electric, and

Standard Oil) (Geist, 1997). Central to the success of these organisations were American and British bankers. The most famous of these was J P Morgan & Company that provided American companies with financial advice, corporate governance, and access to mainly British funds from investment trusts, property trusts, and the London Stock Exchange. The infusion of foreign capital also meant the importing to the US of other capital market-related services from public accountancy and stock-broking firms (Wilkins, 1989; Geist, 1997). These organisations not only provided needed funds and conduits to investment opportunities, but also introduced professional expertise that was lacking at that time in the US. The American Mortgage Company of ATN was a small part of this process. According to Wilkins (1869), it lent in Alabama, the Dakotas, Georgia, Iowa, Mississippi, Missouri, Oregon, and Washington. Its eventual parent company, the Scottish American Mortgage Company, was one of the most successful property trusts investing in the US, and had 65% of its loans in the southern US by 1890. ATN was therefore a part of this aspect of American financial history. In addition, given his links to the US, the emigration of JBN in 1898 is less surprising than it might have been otherwise.

3.2. *The Niven practice*

In 1859, ATN contracted with Patrick Morison (SAE, 1854) as his first partner and formed the firm of A. T. Niven & Company (ATNC). Morison was the son of James Morison, a Perth accountant, and had trained in Perth and Edinburgh before practicing on his own from 1850. He partnered ATN for one year before ill health forced his retirement in 1860. As previously mentioned, ATN and John Frederick Moffatt were partners from 1865 to 1869. ATN moved his practice and residence several times in the New Town during these

¹⁷ Insurance was an expanding business in the 19th century and many companies were formed or located in Edinburgh (Cockerall and Green, 1994). There were strong connections between the legal and accountancy professions and the management of Edinburgh insurance companies (Brown, 1905; Lee, 1996).

¹⁸ Despite these insurance appointments, ATN was classified in the charter application of the SAE in 1853 as an ordinary rather than honorary member (Lee, 1996). The honorary classification was given to potential SAE members who were not in public accountancy practice (e.g. insurance company managers). ATN's ordinary status implies that his practice included court-related and other accounting services in addition to his insurance management activities.

¹⁹ The reason for this sale can be reasonably speculated as ATN's involvement in the City of Glasgow Bank collapse (Richards, 1981). He was a trustee shareholder when the Bank was liquidated in 1878 with more than £6m pounds of debt. The subsequent calls on the shareholders bankrupted most of them. ATN is reported to have paid his debt and more (Richards, 1981). Tyson (1974) provides an account of the City of Glasgow Bank collapse.

years before occupying a private residence at 6 Abbotsford Crescent in the Newington area of Edinburgh. He had married in 1856 and, in addition to his wife, there were five children and four female servants there according to the 1881 Census. The size of this household suggests that, in the apparent absence of inherited wealth, there was a successful professional practice to support it. ATNC was not large compared to a major Edinburgh practice such as Lindsay, Jamieson & Haldane (Walker, 1993). According to SAE records (Scottish Records Office, 111/1-7), ATN had 23 apprentices between 1856 and 1914. Eight failed to complete their contracts and 10 became SAE members. The highest number of apprentices employed in ATNC was seven in 1876 and 1878. All of ATN's apprentices were from Edinburgh or its surrounding regions, and one-half were sons of professional men. These data suggest an organisational structure for ATNC that was not dependent on low-cost apprentices. A surviving photograph of ATNC staff in 1881 shows 15 men and includes four apprentices (Richards, 1981).

ATNC did not have many partners. Following Peter Morison and John Frederick Moffatt, his next partner was Robert Cameron Cowan (SAE, 1864) in 1870. Cowan came from Ayr where his father was Agent for the Royal Bank of Scotland. He had a Master of Arts degree from the University of Glasgow (1856) and a legal training in Edinburgh prior to an SAE apprenticeship with Lindsay, Jamieson & Haldane. Cowan's partnership with ATN lasted until 1879 when he started to practice on his own. His practice included the audit of the Scottish Heritable Security Company during a period when ATN was a director (1879-95).

ATNC moved several times within the New Town in the 1870s and 1880s. ATN also moved his family in 1882 to 28 Fountainhall Road in Newington. This was a large 16-room residence that remained his home until his death in 1918, and confirms the impression of the times that ATNC was a small but viable Edinburgh practice (Richards, 1981). ATN's next partner was Donald Finlayson Sutherland (SAE, 1898), son of the Cashier of Lindsay, Jamieson & Haldane. Sutherland had attended school with JBN before an apprenticeship with his father's employer (1892-7). In 1900, he joined JBN's firm, Touche, Niven & Company (TNC), in New York. However, he returned to Edinburgh in 1903 and entered a partnership with ATN that lasted until 1910, when he was appointed as an accountant with a London precious metals trader, Johnson, Mathey & Company. In 1924, he rejoined Lindsay, Jamieson & Haldane in London and became its senior partner there in 1926.

According to his obituaries, ATN had many cor-

porate directorships and church-related appointments. However, the only directorships publicly listed between 1880 and 1900 were the two property investment companies he founded and the Scottish Metropolitan Life Association (now part of the Commercial Union Insurance Group) (Skinner, 1880-90). ATN was also Secretary of the Edinburgh Railway Station Access Company formed to give easier access to the Waverley Railway Station.²⁰ He was Treasurer of the Scottish Protestant Association, the Saturday Half-Holiday Association, the Scottish Vocal Music Association, and the Edinburgh Ayrshire Club. Directorships included the Ark Assurance Company and the Morningside Atheneum formed to provide instruction in art, literature and science for men working in commerce. Audit appointments were held for the Edinburgh Industrial Brigade & Home for the Rescue of Destitute Boys and the Edinburgh Photographic Society.

3.3. *Niven and the SAE*

ATN played no active part in the SAE formation in 1853 and 1854 (Lee, 1996). This is unsurprising given his young age and family origins outside Edinburgh. However, he apparently had sufficient social connections in Edinburgh by 1853 to be part of the SAE foundation (Lee, 2000), and he was not excluded on the grounds of lack of professional experience or family roots in Edinburgh. It is therefore reasonable to argue that the Niven family background, particularly in the Church of Scotland, was a significant contributing factor to his SAE membership. His only active participation in institutional public accountancy after 1853 was as a member of the SAE Examination Committee (1874) and its Council (1877-81).

3.4. *ATN's family*

As stated above, ATN's private residence for more than 50 years was in the Newington area of south Edinburgh. Thirteen years were spent at 6 Abbotsford Crescent and the next 36 years at 28 Fountainhall Road. The nature of these properties suggests upper middle class affluence. ATN apparently drove himself to work in a horse-drawn carriage, dressed in morning coat, striped trousers and top hat (Richards, 1981), and these characteristics are confirmed in surviving photographs (*Niven Family Papers*). He was in active public practice until a few days before his death in 1918 although, in a letter to JBN in 1905, he writes of severe headaches and shaking hands (*Niven Family Papers*). In a 1917 interview (*The Pace Student*, October 1917), JBN states that accounting princi-

²⁰ Once the street was complete, the company and ATN continued a decades-long argument with Edinburgh Town Council over the ownership of a wall in the street that the Council wanted to remove for development (Niven, 1875).

ples were a regular topic of conversation at home with his father when he was young and that public accountancy was an automatic career choice.

ATN is recorded in the 1891 *Census* as the head of the household at 28 Fountainhall Road. Also resident were his wife, three children (including JBN), and two domestic servants (one was born in the US). When he died testate in 1918, he left a confirmed estate of approximately eighteen hundred pounds sterling (Scottish Records Office, *Books of Commissariat*, 1918: 617). This is one-tenth of the estate left by his contemporary, George Auldjo Jamieson (SAE, 1854) of Lindsay, Jamieson & Haldane, Chartered Accountants (Walker, 1996). It also does not suggest a wealthy individual unless he gifted estate to his children prior to his death, and no record can be found to evidence this.²¹

Other than his Church of Scotland activities described below, little is known of ATN's private life. Surviving diaries of his daughters, however, suggest a close family group (*Niven Family Papers*). In 1856, he married a second cousin, Agnes Howie Ballantine, the eldest daughter of John Ballantine, an Ayr banker. Alexander and Agnes Niven had seven children in addition to JBN. Eliza Susannah Niven married a Solicitor in the Supreme Courts who was appointed Procurator Fiscal for Argyle (i.e. equivalent to a district attorney in the US). Agnes Howie Stewart Niven was a well-known violin teacher in Edinburgh who died unmarried in 1928. Margaret Matilda Gibb Niven died unmarried aged 22 in 1882 and Alexander Thomas Frederick Niven died aged six years in 1871. An unnamed daughter died at birth in 1870. Marcellus Forbes Niven married a ship's draughtsman in Glasgow.

ATN's fifth child, Janet Ballantine Niven married Henry Moir in 1899. Moir was at school with JBN, a Fellow of the Faculty of Actuaries (1893), employed by the Scottish Life Assurance Company, and active in the educational affairs of the Faculty in the late 1890s (Davidson, 1956). He emigrated to the US in 1901. Described in the *Insurance Year Book 1923-1924* as an internationally prominent actuary in the insurance world, Moir was President of the Actuarial Society of America, President of the United States Life Insurance Company, and one of the most prolific authors on actuarial matters of his time (*Journal of The Institute of Actuaries*, [68], 1937). It is reasonable to presume that his boyhood friend JBN influenced him in his emigration decision. Thus, at least indirectly, JBN could have influenced the development of the US insurance profession in addition to that of public accountancy.

ATN's familial connections to the Church of Scotland provided strong threads throughout his life. He was ordained as an Elder in Balfour in 1855, attended West St Giles Parish Church, and

was the representative Elder for St Luke's Parish Church for more than 50 years. He was a member of the Edinburgh Presbytery from 1863 until his death in 1918. His General Assembly activities included membership of many of its committees in which he maintained a persistent conservatism within a pleasant personality.²²

4. Continuing the Niven line in the US

JBN was born in 1872 and educated at Ariad House School and George Watson's College in Edinburgh. He excelled as a singer and graduated with distinction in mathematics in 1887 (*Niven Family Papers*). He was then apprenticed to David Pearson (SAE, 1862) of C & D Pearson, Chartered Accountants, in Edinburgh (1887-93) and admitted to the SAE in 1893.²³ He worked in his father's firm from 1893 until 1897. During that time, despite his mathematical ability, he failed the final examination of the Faculty of Actuaries on three occasions (*Niven Family Papers*). He was appointed as SAE Lecturer in Bookkeeping and Accounting in 1896. Nothing is known about the type of work he did for ATNC, although later evidence from the US suggests he was familiar with court-related accounting services. He was active in public service and his church.²⁴

In 1898, with a letter from his minister, Dr Andrew Williamson, testifying to his family's church pedigree and his good character, and three new suits and other items purchased for approximately twenty pounds sterling, JBN emigrated to the US (*Niven Family Papers*). He had a non-contract position as an audit clerk with Jones, Caesar & Company (JCC), Chartered Accountants, in Chicago. JCC was the US agent for Price, Waterhouse & Company (PWC) of London (DeMond, 1951). How and why JBN went to JCC

²¹ The comments in footnote 18 also apply here.

²² ATN is described in *The Scotsman* (March 18, 1915) as always strenuously opposing the great changes that took place in the church. A church commentator described his 'decided aversion to hymnals, instrumental music, and all innovations of whatever nature' (Rae, 1910). He styled himself as "a thoroughly reliable Presbyterian Churchman, a Puritan" (*The Scotsman*, March 3, 1915).

²³ Pearson was the son and partner of Charles Pearson, one of the most socially connected of the SAE charter members (Lee, 2000). Charles Pearson was SAE President (1876-9) and David Pearson later held the same office (1898-1901). In a written letter of reference for JBN in 1893, David Pearson testifies to Niven's unwavering courtesy, attention to business, good knowledge of accounting, and accuracy and quickness with figures (*Niven Family Papers*).

²⁴ JBN was an Enumerator (recorder) for the 1891 Census in Newington and in charge of the Ardfarn, Argyleshire, polling station during the 1895 General Election (*Niven Family Papers*). Like many of his contemporaries, he joined the Accountants' Company of the Queen's City of Edinburgh Volunteer Rifle Brigade (1894). He was actively involved as a member of West St Giles Parish Church. (*Niven Family Papers*).

in Chicago is not known.²⁵ This was a period of significant oversupply of Edinburgh Chartered Accountants (Walker, 1988). Between 1885 and 1904, 312 men joined the SAE but only 48% of this group remained in Edinburgh. Walker (1988: 45) states that JBN was an exception to the general rule of oversupply and, given the Niven family background, there is little evidence to suggest otherwise.

More specifically, it is reasonable to argue that JBN's emigration may have been a deliberate decision to provide him with direct experience of public accountancy practice in the US within the context of corporate organisations in which there was substantial British investment. Such a move could have originated from his boyhood friend, George Alexander Touche (SAE, 1883) (GAT), who was significantly involved in British investment in the US by the end of the 19th century (Murphy, 1960; Richards, 1981).²⁶ GAT was apprenticed to ATN before leaving for Broads Paterson & May, Chartered Accountants, in London in 1883. During the 1880s, the concept of the investment trust had migrated from Scotland to London and in 1889 the Industrial & General Trust was formed with GAT as its Secretary. It invested heavily in the US and lost 60% of its capital during the US stock market crash and panic of 1893.

A year later, GAT was appointed Manager of the Trust with a remit to reconstruct it. He did so successfully by a careful choice of corporate investments following audits of their financial records and statements. He also held numerous directorships in US companies funded with British capital. GAT frequently travelled to the US to advise British investors on American companies and met many influential US businessmen – including Samuel Untermyer, a leading New York lawyer and counsel for the investment bank of Goldman, Sachs & Company.

In order to provide the audit and investigation services necessary for his investment practice, GAT founded George Touche & Company (GTC), Chartered Accountants, in London in 1899. The

1893 US stock market panic had warned British investors of the need for skilled auditors to examine the financial records and statements of potential US investments. In addition, there was a merger boom in the 1890s in the US that also required skilled audit examinations on behalf of investing banks such as J. P. Morgan & Company (DeMond, 1951; Geistt, 1997). However, there were few American-born and trained auditors available with the necessary competence to effectively complete this work (DeMond, 1951; Carey, 1969; Merino, 1975; Miranti, 1990; Allen and McDermott, 1993). As a consequence, British public accountancy firms such as JCC in Chicago (1895) and GTC in London (1899) were formed to meet the demand (Lee, 2001b). For example, GTC frequently provided audit and investigative services at the request of J. P. Morgan & Company (Hoyt, 1966). Morgan maintained offices in both New York and London to expedite the British financing of US companies and GAT adopted this model in reverse. The demand for audit services in the US also resulted in a significant emigration of British chartered accountants prior to World War I (Lee, 2001a). JBN was part of this process of transferring public accountancy knowledge from the UK to the US.

The choice of JCC in Chicago for JBN's American experience may also have been due to pre-1898 contacts with SAE emigrants to the US. For example, William James Caesar (SAE, 1881), a co-founder of JCC, actively recruited SAE members in Edinburgh (DeMond, 1951) and had a father who was a well-known Church of Scotland Minister at Newbattle to the south of Edinburgh. JBN also qualified as an SAE member in 1893 with two men who were employed by JCC in Chicago by 1898 – Robert Bayne and John Hussey Robertson. Whatever the reason, however, the JCC employment of JBN lasted for only two years. When he left JCC, JBN received a letter from Caesar expressing regret at his leaving and accepting his offer to make 'temporary arrangements' as and when JBN had time (*Niven Family Papers*).

²⁵ Emigration to the US by SAE and other UK Chartered Accountants was a continuous process from the 1880s onwards (Lee, 2001a; Lee, 2001b). It reached its peak in the two decades prior to World War I as UK Chartered Accountants founded branch offices, agencies, or new firms (e.g. TNC) in the US due to the lack of skilled American public accountants.

²⁶ George Touche (changed from Touch in 1906) was the son of Anthony Murray Touch, the Edinburgh Agent of the Union Bank of Scotland, and Mary Guild, sister of James Wyllie Guild, Chartered Accountant, one of the founders of the Institute of Accountants and Actuaries in Glasgow (IAAG) in 1854 (Lee, 2000). Touche was therefore the nephew of James Wyllie Guild. He was also active in public service as a Member of Parliament (1910–18) and Sheriff of London (1915–16). In a letter to JBN in 1918 on the death of his father, Touche describes ATN as of 'enduring fiber' and his oldest friend (*Niven Family Papers*).

4.1. Touche, Niven & Company

On May 1, 1900, JBN and GAT founded TNC, Chartered Accountants, at 30 Broad Street in New York. The firm appears to have been formed initially as an agency of GTC (*The Accountant's Magazine*, June 1900; *The Pace Student*, October 1917). Unusually, it was incorporated as a corporation with limited liability, and its partners held shares in it until 1913 when professional pressure from other American public accountancy firms forced JBN and GAT to revert to the customary partnership structure (*Niven Family Papers*). TNC's first audit report was issued in April 1900 to the directors of the North American

Transportation & Trading Company. The first audit engagement was for the International Steam Pump Company, a 'trust' client that had been referred to TNC by Samuel Untermyer. In early 1902, JBN was responsible for the disclosure by the International Steam Pump Company of a consolidated balance sheet (*Niven Family Papers*). This was the first consolidated report issued in the US, preceding that of the United States Steel Corporation (Claire, 1945).

JBN became a New York Certified Public Accountant by examination in 1901, and joined the American Association of Public Accountants (AAPA) in 1904. By means of examination waiver through reciprocity, he was licensed in the states of Illinois (1903), New Jersey (1903), Ohio (1908), Louisiana (1916), and Michigan (1928), and was also a Canadian Chartered Accountant. He became an American citizen in 1905 and thus underlined the permanency of his move from Scotland. In 1908, he was one of the first public accountants in the US to be appointed as a corporate receiver (to the Pillsbury-Washburn Flour Mills Company at the request of GTC in London). He also provided accounting assistance to Charles Evans Hughes in the latter's investigation of the financial practices of life assurance companies in New York (*Niven Family Papers*).²⁷ Hughes' recommendations became a federal blueprint for financial reporting in the US life assurance industry.

The speedy national expansion of TNC is revealed in the opening of offices throughout the US (Chicago and Minneapolis 1913; St Louis 1915; Cleveland 1919; Los Angeles 1923; Atlanta 1925; and Detroit, 1927). In each case, the decision was made on the basis of a need to provide services for a major client (*Niven Family Papers*). The Minneapolis office, for example, was opened to provide audit services to the Pillsbury Company following JBN's receivership of it. The Studebaker Corporation audit was conducted on behalf of Goldman, Sachs & Company, and led to the opening of the Chicago office under the management of Charles R. Whitworth, an English Chartered Accountant who had worked with JCC in New York and became an AIA Examiner and Council member (1925–30). Other early audit clients of TNC included the American Potato Machinery Company (1914), the Quaker Creamery Company

(1913), and the Mesaba Motor Company (later Northland Greyhound Lines) (1925).

Early TNC employees included Herbert C. Freeman, a non-accountant and former private secretary to GAT in London (1906–13). Frederick George Colley became a TNC partner in 1913 when he opened the Chicago office. He was a railroad engineer and former private secretary to Sir Nicholas Waterhouse of PWC in London, former president of a button manufacturing company in New York, and a Certified Public Accountant in several states including New York. As a member of the AIA Education Committee (1916–18), he helped to write and introduce the Uniform CPA Exam (Samson and Fields, 1996). Colley left TNC in 1917 to become Comptroller of the Pierce Oil Corporation. He then became a partner in Arthur Young and Company in 1919 and was AIA Auditor (1921–2). Ellsworth M. Taylor managed the Product Cost Department of TNC from 1908 to 1911. The Department provided what is described today as management services. It was the brainchild of JBN and he admitted later to his mistake of closing it down in 1911 (*Niven Family Papers*).

4.2. The Ultramares case

By 1936, TNC had 19 partners and was auditing major US corporations such as H. J. Heinz & Company and R. H. Macey & Company. This success, however, exposed the firm to the possibility of lawsuits as its audit opinions were increasingly relied on in the public domain. In 1931, TNC defended the landmark civil court case of *Ultramares Corporation v. Touche* (N.Y. 170, 174 N.E. 441, 74 A.L.R. 1139, 1931). TNC had audited and certified the 'truth and correctness' of the 1923 balance sheet of Fred Stern & Company, a rubber products manufacturer (Niedson, 1965). The Ultramares Corporation and two other banks had lent to Stern in 1924 shortly before the latter declared bankruptcy. The lenders had depended on the audited balance sheet of 1923 in making their loan decisions. However, the statement had been fraudulently prepared. Each partner in TNC, including JBN and GAT, was charged with intent to defraud and professional negligence. The fraud charge was dismissed and, following two appeals, the New York Court of Appeals headed by Justice Benjamin Cardoza unanimously decided that, due to no specific contract between TNC and Ultramares, there was no basis for a negligence claim.

Cardoza, however, stated that Ultramares could have made a case on the basis that the TNC partners had closed their eyes to the obvious nature of the fraud.²⁸ The case concerned the still-debated issues of third party liability by auditors and the nature of fraud in cases of auditor negligence. JBN was the TNC partner exclusively involved in the successful defence of the case over two years, and

²⁷ Charles Evans Hughes was one of the great American jurists (Johnston, 1966). As a New York lawyer, he built his early reputation investigating the financial practices of the New York gas industry and New York life assurance companies. He later became Chief Justice of the US Supreme Court.

²⁸ Benjamin Nathan Cardoza (1870–1938) was a New York lawyer who was elevated to the US Supreme Court in 1932 (Johnston, 1966). He was Chief Justice of the New York Supreme Court in 1930 at the time of the *Ultramares* case and strongly believed that sociological jurisprudence should change with the times.

current Niven family members confirm the personal stress that this created over what he regarded as the disgrace of TNC being taken to court for alleged substandard auditing.

Despite the tribulations of the *Ultramares* case, the professional success of JBN as a US public accountant and TNC as a national public accountancy firm is evident from several organisational mergers in which the firm was later involved (Swanson, 1972). In 1947, TNC combined with George Bailey & Company (GBC) of Detroit and A R Smart & Company (ARSC) of Chicago to form Touche, Niven, Bailey & Smart (TRBS). Iowa-born George Bailey and several associates from Ernst & Ernst, Certified Public Accountants (CPAs), formed GBC in 1947. ARSC was a firm founded in 1918 by Allen Smart, an English-trained accountant who came to the US in 1888. JBN was senior partner of TRBS shortly before his death in 1954. In 1960, TRBS combined with the Canadian firm of Ross, Touche & Company and the London firm of GTC to form Touche, Ross, Bailey & Smart. In 1969, the name was reduced to Touche Ross and, today, after a 1989 merger with Deloitte & Company, it was renamed Deloitte & Touche. The merger in 1947 brought several large audit clients within the TNC portfolio (e.g. the American Motor Corporation, the Boeing Corporation, the Chrysler Corporation, the Mead Corporation, Sears, Roebuck & Company, and the Stroh Brewery Company).

4.3. Influencing the US public accountancy profession

Although he was an emigrant to the US, JBN did not rely heavily on British emigrant accountants for the early development and growth of TNC. This is unlike the practice of other US firms founded by UK emigrants that have survived to become part of today's 'Big Five' (Lee, 2001b). However, nor was his employment practice the 'Americans-only' policy of Ernst & Ernst (1920). There were 14 British accounting emigrants employed by TNC prior to 1915. Four were SAE members, seven were IAAG members, two were English Chartered Accountants, and one was an unqualified accountant. Only three of these men remained with TNC for significant periods of time.

JBN contributed greatly to the institutional aspects of American public accountancy. He was deeply involved in the management of professional bodies. The offices he held, for example, included Vice-President of the AAPA (1914–17), President of the New Jersey State Society of CPAs (1915–21), President of the New Jersey State Board of Accountancy (1915–21), member of the AIA Council (1917–26; life member 1949–54), member of the AIA Executive Committee (1917–49), board member of the New York State

Society of CPAs (1918), AIA Vice-President (1921–2), and AIA President (1924–5).

This is a formidable record of professional service, particularly by an emigrant to the US who was also expanding a national firm of public accountants. JBN was a wise and moderating voice in the disputes of the early 1900s concerning the relative merits of federal and state regulation of the profession (Carey, 1969; Swanson, 1972). He had witnessed directly and indirectly (through his father's experiences) the divisions in British Chartered Accountancy of the second half of the 19th century (Macdonald, 1985; Walker, 1991; Shackleton, 1995). JBN was a major influence in the introduction of the Uniform CPA Exam as Chair of the AIA's Board of Examiners and in the development of the *Journal of Accountancy* as Chair of the AIA Committee on Publications (Swanson, 1972). He was also one of the pioneers of tax accounting in the US. In 1913, the Sixteenth Amendment to the US Constitution allowed income tax to be levied for the first time. The editor of the *Journal of Accountancy* in the same year asked JBN to write a monthly tax section to prepare public accountants for the service opportunities the new tax offered. He did so from 1913–1920.

JBN's reputation as a US public accountant was recognised in *The Accountant's Magazine* (December 1924: 655) on his election to the AIA presidency:

'The great expansion of professional accountancy in America, and the high esteem in which it is held there, have been due, on the one hand, to the demand by an eager, alert, and progressive business community for the best and most efficient methods of commercial direction and control, and to the able manner in which that supply has been supplied by men of the highest probity in the practice of accountancy. Amongst these men, Mr Niven has been one of the most respected and trusted representatives of his profession.'

These are words consistent with the professionalism and public service of JBN's forebears, and his foresight and action in recognising change and opportunity in an emerging business community is consistent with the involvement of his father in the management of insurance and property companies investing in the US. His early use of consolidated financial statements for clients, initiation of a management services department in TNC, a large-scale merger of TNC with other firms, and involvement in professional unification and education are several examples of his professional creativity and vision. They go much further than the expected transfer of professional knowledge from one country to another as a result of emigration. They reflect a careful consideration of the needs of the US for public accountancy services, and the avoidance

of the professional bickering that characterised the early history of British public accountancy.

4.4. Family matters

According to his obituary in the *New York Herald Tribune* (November 12, 1954), JBN also contributed greatly to his local community. He was active in public service as a director of the New York Chamber of Commerce, and as a trustee and Mayor of Mill Neck, Long Island (1935–53), where he lived for most of his professional life. He married Susan Wallace Ogden Gordon in New York in 1905. She was born in Toronto, Canada, in 1881 and was the daughter of a lawyer, William Seton Gordon. ATN did not attend the wedding but was represented by his daughter, Agnes, and son-in-law, Henry Moir. He wrote to JBN in May 1905 offering his good wishes and seeking instructions regarding what information about the marriage to make public in Scotland (*Niven Family Papers*). JBN and his wife initially lived in Montclair, New Jersey and, in 1915, moved to Oyster Bay overlooking Long Island Sound. They had no issue but adopted William Seton Duys, the son of a brother-in-law and German emigrant merchant in New York. William Niven was a graduate of Princeton and Harvard Universities, trained with TNC, a New York Certified Public Accountant (1945), and a partner in Peat Marwick Mitchell & Company in New York until 1975.

JBN died as an Episcopalian despite the strong Presbyterian background of the Niven family through two centuries, ATN's lifetime involvement in the Church of Scotland, and his active membership in the Church of Scotland prior to emigration. He was a member, Vestryman, and former Treasurer of St John's of Lattingtown Church near Oyster Bay. He alternated as Treasurer with his friend and the Church's senior Warden, John Pierpont Morgan, head of J. P. Morgan & Company from 1913 until 1963 (Strousse, 1999). JBN was described in a resolution of the Vestry of St John's in 1954 as a leader in church affairs, kindly, unassuming, generous, friendly and faithful (*Niven Family Papers*).

At least in the particular matter of religious affiliation, JBN's Scottish background was replaced by his American experience. The friendship with Morgan resulted from the business relationship originating between Morgan and GAT in London and New York at the turn of the century.

5. Threads through time – summary and conclusion

This study is not intended as a complete biography of either ATN or JBN. It is an attempt to analyse their professional careers and personal lives within the context of a Niven family genealogy. Both men were pioneers in modern public accountancy. ATN was one of the first public accountants to be

institutionally governed as a professional. JBN was a member of a small community of British public accountants in the US who significantly influenced the development of its profession by the transfer of needed professional knowledge and experience. Both men founded firms that became part of one of the world's largest providers of public accountancy and related services.

The Niven genealogy reflects two centuries of continuous upward social mobility for the family in Scotland and the US. The process ranged from the middle of the 18th century in a small rural farming community in southwest Scotland to a wealthy commuter town south of New York in the middle of the 20th century. It involved five generations of Niven, patronage, marriages, and occupational transitions. Nivens were in constant contact with men of influence in Scotland and the US. For example, the first Reverend Alexander Niven had influential patronage from John Hamilton and the Duke of Atholl, and he married into the Dick and Stewart families of landowners and lawyers. He had two sons in each of the ministerial, legal, and medical professions. The second Reverend Alexander Niven received patronage from the Lord Lyon King of Arms, and married into the family of Dr Thomas Brown, the second Moderator of the Free Church of Scotland. He had two sons as ministers and ATN as a public accountant. His second son had the Earl of Stair as patron, became Moderator of the Church of Scotland, and married into the family of a prominent landowner. ATN was placed with the family of a Moderator of the United Presbyterian Church for his public accountancy training in Edinburgh, and JBN with that of one of the most prominent of the SAE founders. JBN also benefited from an early connection to the Touche family and its business connections to prominent American families such as the Morgans.

The social influence of members of the Niven family was considerable through two centuries despite many early deaths and marriages without issue. The influence was particularly noticeable in church ministry and public accountancy. By the time JBN arrived in the US at the end of the 19th century, Nivens were well used to taking leadership roles – for example, as burgh magistrates, parish ministers, and company managers. Given his family's history in this respect, therefore, it is unsurprising to find that JBN was a leader in TNC and the AIA. In addition, Nivens through the decades emigrated in order to succeed in their occupations. Most of the early migrations were within Scotland – for example, from Ayrshire to Perthshire to Stirlingshire to Edinburgh. However, several Nivens were in India in the early 19th century and other family members migrated to different parts of the British Empire. JBN's emi-

gration to the US was consistent with this family characteristic. In his case, emigration transferred needed professional knowledge to the US during a period of economic expansion and international investment. What is most remarkable about this is that JBN *and* his brother-in-law provided leadership in the US in two related professions that were institutionalised in Edinburgh at about the same time (i.e. actuarial science and public accountancy) (Davidson, 1856).

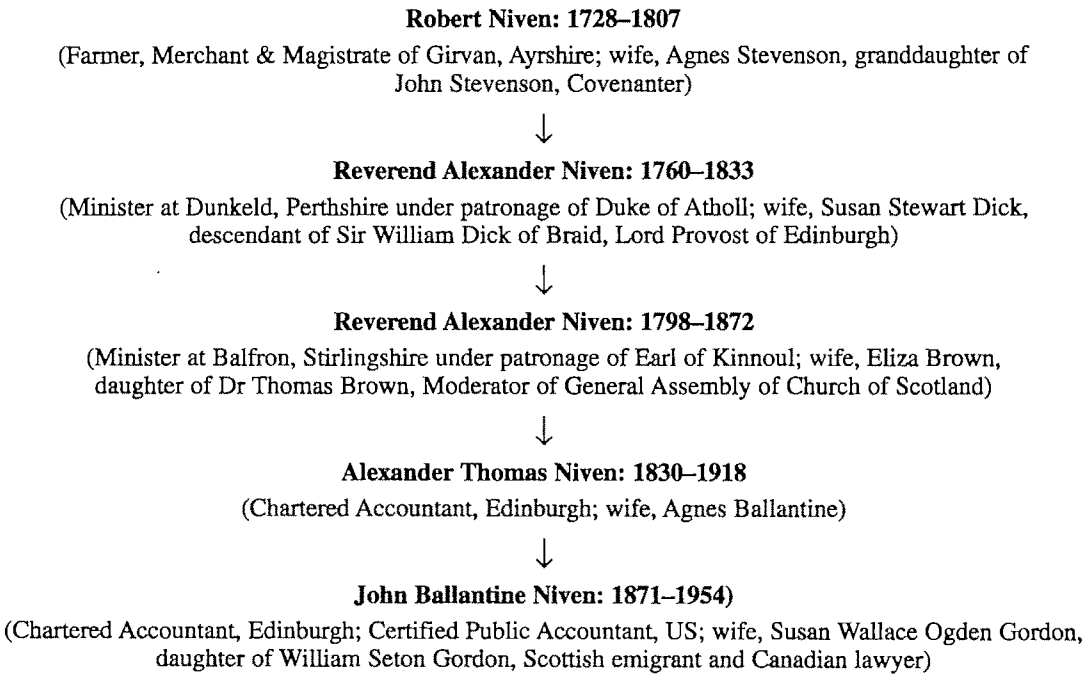
The Niven family also benefited from a number of significant episodes in the social histories of Scotland and the US. The first episode was the early availability in Scotland of primary school education based on parish ministries. This happened as a direct result of Presbyterianism becoming the national religion at the end of the 17th century (Corr, 1990). Despite regional variations in quality, parish schools gave able children the opportunity to prepare for university and possible entry to a range of professions. All generations of Niven in this study benefited from this educational provision in terms of their later occupation. The second historical episode relates specifically to ATN and

JBN. They witnessed the emergence of institutionalised public accountancy as a reputable profession in Scotland and the US. They identified and enjoyed the economic and social opportunities afforded by its relative novelty. The relationship between public accountancy, insurance management, and investment trusts within an international context is particularly pertinent to ATN and JBN.

The career of JBN in particular is a clear illustration of the potential for a skilled emigrant to transfer professional expertise to a market lacking these resources. His success, however, could not have happened without the earlier careers of members of his family as church ministers, lawyers, and public accountancy (in the case of ATN). In this respect, it is reasonable to conclude that the historical significance of ATN and JBN to the development of modern public accountancy is much more than a summation of the individual events and achievements in their careers. Their success as public accountants was the outcome of the occupational transitions and social connections of several generations of Niven.

Appendix
Niven family tree

This is a truncated reproduction of the family tree commissioned by and produced for the partners of TNC in 1904 (*Niven Family Papers*). It was prepared as a gift for ATN on the 50th anniversary of his SAE membership.



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The roots of operational (value-for-money) auditing in English-speaking nations

Dale L. Flesher and Marilyn Taylor Zarzeski *

Abstract—Operational auditing, also known as comprehensive auditing, management auditing, performance auditing, and value-for-money auditing, has had a diverse history across countries and professional disciplines. Although operational auditing is primarily a function of the internal and governmental auditor, public accountants and management consultants also perform similar audits. The roots of operational auditing go in multiple directions, as various organisations have played major roles in its development. Influential organisations were the General Accounting Office (GAO), under the leadership of T. Coleman Andrews; the American Institute of Management, led by Jackson Martindell; the Canadian Comprehensive Auditing Foundation, under the leadership of J. J. Macdonell; and the Institute of Internal Auditors (IIA), under the leadership of many individuals. Although the work of Martindell was carried on simultaneously with that of the IIA and the GAO, there was little influence of one group on another. In other words, two different professions developed operational auditing independently, but simultaneously. The US was the leader in the development of the concept of operational auditing. Surprisingly, despite its leadership in operational auditing development, principles developed in the US have not been adopted by other nations. Instead, Canada developed its own system, which was later partly copied by others in the British Commonwealth. This historical view of operational auditing across English-speaking countries provides evidence that international diffusion and cross-disciplinary diffusion of auditing ideas has been minimal.

1. Introduction

There are several roots of operational auditing across countries and across time. Operational auditing involves the periodic evaluation of managerial efficiency and effectiveness by non-managerial personnel. Other interchangeable terms for operational auditing are management auditing, performance auditing, comprehensive auditing (in Canada), and (in the British Commonwealth) value-for-money auditing. Basically, a value-for-money, or operational audit is a systematic, non-financial evaluation of an entity's operations, and an organised search for ways to improve managerial efficiency and effectiveness. Typically, internal auditors have been associated with this type of audit, particularly in government entities, but public accountants and management consulting firms are becoming more active in the field. Interestingly in the US, the roots of operational auditing span at least three directions. Besides internal auditors, the management profession and government accountants have played major roles in the development

of operational auditing as it is practised today. Outside the US, there is still an additional root – one originating in Canada – which has somewhat popularised the international growth of the concept. This paper tracks the notion of the value-for-money audit and its relatively recent (in terms of accounting history) rise to prominence in accounting thought in the US and other English-speaking countries. The role of diffusion of ideas from one country or culture to another is examined. This limitation to English-speaking countries is *not* a suggestion that contributions have *not* been made in other languages. Indeed, contributions have been made in other nations, particularly those in Scandinavia, but the diffusion to English-speaking countries has been limited or nonexistent.

2. Early background of management stewardship

Historically, the idea of management stewardship formed the basis for the concept of accountability. For example, old English manorial estate accounting was exemplified by the charge and discharge statement and by the fiduciary responsibility of the manager of the estate (Chatfield, 1977: 23–25). However, stewardship in today's terms entails more than a fiduciary responsibility to protect an entity's assets. The charge and discharge statement is less the model for modern stewardship accountability than is Christ's parable of the Master who entrusted talents to his three servants. To the two servants who utilised the entrusted talents wisely, the

* The authors are, respectively, Dale L. Flesher, Arthur Andersen Alumni Professor, E. H. Patterson School of Accountancy, University of Mississippi, University, Mississippi 38677 Tel: (662) 915-7623. Email: acdlf@olemiss.edu and Marilyn Taylor Zarzeski, Croft Associate Professor of International Accounting, Croft Institute of International Studies and E. H. Patterson School of Accountancy, University of Mississippi. Tel: (662) 915-5688. Email: Zarzeski@olemiss.edu. Correspondence should be addressed to Professor Flesher.

Master shined his favor upon them. But the Master dismissed as unworthy the servant who exercised temerity in his stewardship and returned only the original talent (Matthew, 25:14–30). This stewardship ability to use one's talents and resources wisely is the subject of the value-for-money audit.

The concept of value-for-money audits has been around for centuries. One article referred to recognition of such audits by English government auditors as early as 1180 and 1662 (Dewar, 1985: 10). That same article cited the Act of 1667, which mandated special commissioners (auditors?) to examine the care, fidelity and good husbandry with which the management of the Royal Navy was carried out. References to the work of Roman writers such as Aristophanes, Caesar, and Cicero carry the concept back even earlier to Biblical times (Cashin, 1965: 16). Similarly, the Zenon papyri record the application of internal audits on the Egyptian estate of the Greek ruler Ptolemy Philadelphus II as early as 2,500 years ago (Grier, 1934: 4). Interestingly, these early audits were in many ways similar in scope to that of the modern internal auditor in that they included both an examination of the correctness of accounting records and an evaluation of the propriety of activities reflected in the accounts. Emphasis was on improving management control over the activities of the organisation. Such broad emphasis was not to reappear until after World War II.

3. Evolution of the internal auditor's role

The profession of internal auditing has changed considerably over the past 50 years. Today, the internal auditor is accepted as an integral part of the management team. In fact, in some firms the internal auditor now carries the title of operational auditor, the newer title signifying the expanded role the auditor plays in the modern firm. A look at the evolution of internal auditing provides a perspective on the function of internal auditing in today's world – a function that includes not only financial auditing, but operational auditing as well.

Historically, internal auditing has been considered to be of more recent vintage than auditing by external accountants. Although a form of internal auditing existed among the manor houses of England as early as the Middle Ages, historians usually discount these early audits since they were actually performed by the lord of the manor who was simply trying to keep up with his own business (Pointer, 1973: 35). More commonly, railroad companies are credited with being the first modern employers of internal auditors. It was during the latter part of the 19th century that these first legitimate internal auditors became commonplace. The title applied to these employees was 'travelling auditors'. Their duty was to visit the railroads' ticket agents and determine that all monies were properly

ly accounted for (Jones, 1969: 65). Other early industries to employ internal auditors included the large Krupp Company in Germany. The Krupp Company apparently employed some type of internal audit staff at least as early as 1875 since there is a company audit manual dated January 17, 1875:

'The auditors are to determine whether laws, contracts, policies and procedures have been properly observed and whether all business transactions were conducted in accordance with established policies and with success. In this connection, the auditors are to make suggestions for the improvement of existing facilities and procedures, criticisms of contracts with suggestions for improvement, etc.' (Brown, 1974: 1)

Although the roots of operational auditing do date back to the 19th century, and even to ancient times, the real growth of operational auditing did not occur in the US until the early part of the 20th century with the growth of the large corporate form of business.

'The principal factor in its emergence was the extended span of control faced by management in concerns employing thousands of people and conducting operations from widespread locations. Defalcations and improperly maintained accounting records were obvious problems under these circumstances, and the growth in the volume of transactions presaged a substantial bill for public accounting services for the business that endeavored to solve the problem by continuing the traditional form of audit by the public accountant' (Stettler, 1974: 78).

The importance of company size on the employment of internal auditors is further demonstrated by a study of companies that employed internal auditors: the average ratio of internal auditors to other employees was 1 to 769 (*Internal Auditing*, 1963: 9).

The objectives of the early internal auditors were primarily built around the protection of company assets. The National Industrial Conference Board's study of internal auditing explained the early motives as follows:

'Protection of company assets and detection of fraud were the principal objectives. Consequently, the auditors concentrated most of their attention on examinations of financial records and on the verification of assets that were most easily misappropriated. A popular idea among management people a generation ago was that the main purpose of an auditing program was to serve as a psychological deterrent against wrongdoing by other employees' (*Internal Auditing*, 1963: 4).

The foregoing study recognised that the internal

auditor of yesteryear did not perform the same duties as the modern-day internal auditor. Additionally, there was no need for the pioneer internal auditor to perform all of the functions handled by today's internal auditors.

In less complicated times, of course, management frequently maintained control over company operations by personal supervision. There were not so many levels of authority separating policy makers from production workers, and demands on senior executives' time were neither so numerous nor so urgent. The need had not yet arisen to adapt the internal auditing function to the requirements of an elaborate management control system (*Internal Auditing*, 1963: 4).

Horizontal and vertical consolidations of firms in the late 1890s to some degree helped to improve the supply function, the production function, and the marketing function in the newly combined firms. Unfortunately, the financiers and managers of the new larger firms exploited or wasted assets under their control. Some firms developed systems in an informal unplanned manner, while others developed systematic and rational lines of authority and communication (Chandler, 1962). The changing markets provided growth and diversification of products. Chandler states that diversification was far more responsible for the adoption of decentralised activities than was overseas expansion. Such diversification also led to a need for operational auditing.

The growth of large-scale industrial enterprises in the 1920s brought administrative challenges. Top managers of large enterprises needed to develop control systems to be able to understand whether other layers of management were honestly using and controlling the firms' assets. Administrators in companies such as General Motors and du Pont began to develop guidelines for planning, coordination, and appraisal. In 1921, du Pont developed a new strategy: the responsibility of profits and the control of the business must be in the same location.

Jersey Standard Oil, with a history dating to 1912, grew so large that administrative confusion and difficulties resulted in an inventory crisis. At the onslaught of the depression, the company developed even tighter controls and reduced administrative personnel. Chandler (1962) notes that the histories of large industrial enterprises in the first half of the 20th century significantly tell more about why and how they changed their *strategy*, but not how they changed their *structure*.

Williamson (1975) notes that internal structure is important when assessing the internal organisation. He feels that there are real or implied contracts between the firm and the marketplace and between the firm and the employees. The organisational failures framework of Williamson is based

on transactions, whether across markets or within a firm. The internal audit function, when working as expected, continually monitors changes in the firm's transactions. In the multidivisional structure, the elite staff in the general office performs both advisory and auditing functions. This separation of the general office from operating divisions was intended to provide a psychological concern for the overall performance of the firm. The internal audit function of today has remained as an independent unit at the top of the organisation. Williamson notes that the organisation needs to have a separation of operating and strategic responsibilities.

The new control structure of Sears in 1948 gave 'audit' responsibility to staff executives. The staff executives had the 'right of challenge' (Chandler, 1962). The structure allowed for close contact between the staff executives and the headquarters executives. Unfortunately, the structural reorganisation resulted in *more* discussion about lines of communications and authority than in improvement of administrative and financial controls specifically.

The old concept of internal auditing can be compared to a form of insurance; the major objective was to discover fraud more quickly than a public accountant could discover it during an annual audit. The modern concept of internal auditing is that of an 'arm of management'. No longer is the internal auditor strictly a policeman. The modern internal auditor is an integral link in the management process.

The year 1941 marked a major turning point in the development of internal auditing as two significant events occurred. One of those events was the publication of the first major book on the subject – Victor Z. Brink's *Internal Auditing*. Also in 1941, 24 individuals joined to form the Institute of Internal Auditors (IIA) (Brink, 1977: 2). The Institute grew rapidly.

During the 1940s, internal auditors began to expand their audits to encompass much more than just the traditional financial audit. The shift to a war economy in the early 1940s played a part in the cause for the expansion of internal audit scope. Management became more concerned with production scheduling, shortages of materials and labourers, and compliance with government regulations. Simultaneously, cost finding became more important than external financial reporting. As a result, internal auditors started directing their efforts toward assisting management in any way possible. Following World War II, the benefit of the auditor's assistance was so obvious to management that there was no consideration of reducing the auditor's scope to pre-war levels (Flesher, 1991: 4).

4. Birth of the operational audit

The term 'operations' or 'operational' auditing was adopted to describe the expanded auditing activity. The first article published in *The Internal Auditor* that described the expanded scope audit came in March 1948, when Arthur H. Kent's work, 'Audits of Operations,' came on the scene. In his article, Kent made frequent mention of an 'operations audit'. Earlier authors had discussed the subject, but had referred to 'non-accounting matters', instead of 'operational subjects'.

The first technical paper using the phrase 'operational auditing' in the title was written by Frederic E. Mints and published in *The Internal Auditor* in June 1954. Mints later recalled that the term 'operational' evolved in a 1953 brainstorming session with Arthur Kent before Mints was to deliver a speech. The two men considered several labels and finally decided 'operational' had the most aural appeal. Following the publication of Mints' article, there have been hundreds of publications in professional journals on the subject. Subsequently, in 1968, Mints was honored by the IIA with the Bradford Cadmus Award for his career-long effort to expound the cause of operational auditing. In fact, Mints has been called the 'father of operational auditing', but he modestly claims to be only a caring uncle (Flesher, 1991: 158).

The Institute of Internal Auditors was perhaps best able to describe the broad role of internal auditing with its 1957 *Statement of Responsibilities of the Internal Auditor*. According to that publication, the services that the internal auditor provides to management includes such activities as:

1. Reviewing and appraising the soundness, adequacy and application of accounting, financial and operating controls.
2. Ascertaining the extent of compliance with established policies, plans and procedures.
3. Ascertaining the extent to which company assets are accounted for, and safeguarded from, losses of all kinds.
4. Ascertaining the reliability of accounting and other data developed within the organisation.
5. Appraising the quality of performance in carrying out assigned responsibilities (Statement).

Note that three of the above categories (1, 2, and 5) are activities normally included among the duties of an operational or value-for-money auditor.

The 1963 study by the National Industrial Conference Board included a survey of 177 companies as to the companies' principal objectives for internal auditing programs. The five primary objectives were as follows:

1. Determine the adequacy of the system of internal control.
2. Investigate compliance with company policies and procedures.

3. Verify the existence of assets, see that proper safeguards for assets are maintained, and prevent or discover fraud.
4. Check the reliability of the accounting and reporting system.
5. Report findings to management and recommend corrective action where necessary.

These primary objectives were followed by several secondary objectives of internal auditing:

1. Aid in promoting accounting efficiency.
2. Provide a training ground for personnel.
3. Supplement the work of the public accountants and cooperate with them on the annual audit.
4. Appraise personnel performance.
5. Investigate compliance with rules of regulatory agencies.
6. Assist in profit improvement activities.
7. Provide general assistance to management.
8. Assist in instituting new procedures (*Internal Auditing*: 5).

Interestingly, the objectives of appraising personnel performance, assisting in profit improvement activities, providing general assistance to management, and assisting in instituting new procedures were all included in the list of secondary objectives. Yet, these would all be considered an aspect of managerial or operational auditing. Alternatively, a 1975 study by the Institute of Internal Auditors found that 95% of all respondents conducted operational audits for purposes of judging efficiency, effectiveness, and economy. That study found that 51% of the total audit time was spent on operational auditing activities (Survey, 1975). Thus, although the primary objectives of internal auditors may not be operational in nature, the majority of audit time is spent on such activities.

5. Role of the GAO

Various governmental audit agencies throughout the world have led in the movement toward the modernisation of internal auditing procedures. In the US, the General Accounting Office (GAO), particularly, has played a major part in broadening the role of the auditor. That organisation's 1972 publication, *Standards for Audit of Governmental Organizations, Programs, Activities and Functions* (commonly called the 'Yellow Book' because of the colour of its cover) explained the metamorphosis of government auditing in the following manner (GAO, 1972: i).

'This demand for information has widened the scope of governmental auditing so that such auditing no longer is a function concerned primarily with financial operations. Instead, governmental auditing now is also concerned with

whether governmental organizations are achieving the purposes for which programs are authorized and funds are made available, are doing so economically and efficiently, and are complying with applicable laws and regulations.'

The auditing standards advocated in the Yellow Book apply to all audits relating to government activities whether performed by internal auditors of federal, state, or local governments, or by independent public accountants.

Basically, the recommended standards encompass those that have been adopted by the American Institute of CPAs for use in audits that express an opinion on the fairness of financial statements. Governmental audits, however, should go a step beyond those standards and procedures that are applicable to audits of financial statements. The scope of a governmental audit (i.e., an audit of or for a government agency) is composed of three elements. These are:

1. Financial and compliance. Determines (a) whether financial operations are properly conducted, (b) whether the financial reports of an audited entity are presented fairly, and (c) whether the entity has complied with applicable laws and regulations.
2. Economy and efficiency. Determines whether the entity is managing or utilising its resources (personnel, property, space, and so forth) in an economical and efficient manner and the causes of any inefficiencies or uneconomical practices, including inadequacies in management information systems, administrative procedures, or organisational structure.
3. Program results. Determines whether the desired results or benefits are being achieved, whether the objectives established by the legislature or other authorising body are being met, and whether the agency has considered alternatives which might yield desired results at a lower cost.

The typical definition of a financial audit would not include elements 2 and 3. Instead, these are operational auditing techniques.

6. Influence of the United States Congress

The United States Congress played a big role in getting the General Accounting Office (GAO) involved in operational auditing. By 1945, there were 101 federal corporations, the majority of which were totally owned by the federal government. These included such diverse operations as the Panama Railroad Company, the Tennessee Valley Authority, the Federal Deposit Insurance Corporation, the Federal National Mortgage Association, and the Reconstruction Finance Corporation (Mosher, 1979: 127). Congress had

established these corporations, but because most of them were self financed and not subject to the annual appropriation process, they were exempt from normal Congressional control. This absence of financial control became a significant issue during World War II, and a committee chaired by Harry F. Byrd made a study of the subject. The committee recommended that the GAO audit government corporations (Mosher, 1979: 106). As a result of that study, Congress passed, in 1945, the Government Corporation Control Act that provided the initial steps toward the modernization of GAO auditing, as it is known today. The act required commercial-type audits directed not just to legal compliance, but also toward the efficacy of financial management and internal controls ('Audit Crackdown', 1945: 18).

Comptroller General Lindsay Warren had been an enthusiastic supporter of the audit legislation and quickly moved to establish the Corporation Audits Division in July 1945. Warren called upon the American Institute of Accountants to recommend qualified personnel who had extensive experience in public accounting in the private sector. Materials obtained through the federal Freedom of Information Act show that John Carey, then executive secretary of the Institute, recommended T. Coleman Andrews, the senior partner of the Richmond, Virginia, CPA firm that bore his name.

From the beginning, Andrews conceived of the division's audits in broader terms than was typical for audits of private business. This was partially attributable to the specific requirements of the Corporation Control Act, which not only called for examination of financial statements and internal controls, but also reports to Congress on financial condition, impairments of capital, recommendations for the return of government capital or payment of dividends, and the effectiveness with which corporations were carrying out their objectives (Andrews, 1947: 23). Essentially, the Act and the manner in which it was carried out presaged the emphasis given in the early 1950s to programme evaluation and comprehensive audits.

The audit reports issued by the Corporation Audits Division were quite similar to the reports issued by modern internal auditors, but at the time such reports were rather uncommon. In fact, Andrews bragged on the unique feature of having the report begin with a summary of the highlights of the auditors' findings. This was done to conserve the time of members of Congress (Andrews, 1947: 25). The audit reports of the division probably did not win Andrews many friends among auditees, but legislators surely found his reports to provide grist for the mills of Congress. One of the earliest audit reports issued was that for the Reconstruction Finance Corporation's 1945 fiscal year. After emphasising that accounting is primari-

ly a responsibility of management, the report listed a number of critical problems, including the following quotations: 'Woefully deficient in carrying out this responsibility', and 'procrastination to the point of negligence' (Andrews, 1946: 267). Such reports would certainly arouse the attention of who ever was responsible for managing the various federal corporations.

In 1947, after having been on the job for two years, Andrews left the GAO to head up the accounting and auditing study group of the Commission on Organization of the Executive Branch of the Government (i.e., the Hoover Commission). T. Coleman Andrews had accomplished the task of establishing an audit division in the federal government. His accomplishments did not go unnoticed among his peers as the American Institute of Accountants awarded him the gold medal for distinguished service to the profession of accountancy. 'The act for which the award was made was the organization and operation of the Corporation Audits Division of the General Accounting Office' (Carey, 1947b: 448). Incidentally, the report of the Hoover Commission recommended, in its treatment of budgeting and accounting, the establishment of a performance budgeting system in which government programmes would be evaluated on the basis of efficiency in meeting programme objectives (Commission, 1949): again, an Andrews' contribution. Andrews later turned to the revenue side of government finances when President Eisenhower appointed him as the first CPA to be Commissioner of Internal Revenue.

Not only was the GAO innovative in the scope of its audits, but also it has been successful in meeting the objectives for which the broadened scope was intended. The successes of the GAO have been publicly reported in newspapers and in accounting journals such as *The Internal Auditor*. As a result, internal auditors in industry have taken steps to broaden the scope of their own audits. Thus, the concept of operational auditing grew more common among internal audit staff everywhere.

7. Recognition by the AICPA

The work of the GAO led the American Institute of CPAs (AICPA) to become more actively involved in the area of operational auditing (although the term was typically called management auditing when used by practising CPAs). Initially, CPAs tried to incorporate a mini-management audit along with the annual financial audit. This culminated in a management letter that was submitted to the client along with the audit report. As for full-fledged management audits by CPAs, the progress was slow because management audits were defined as culminating in a statement of opinion by

the CPA evaluating the performance of management. An analysis of the subject by CPAs and educators at the 1960 Carnegie Institute of Technology Conference on Accounting Education was inconclusive. There was disagreement among the speakers because several considered that objective criteria for judging management performance had to be in place before the CPA could get involved. In general, the conference participants concluded that such criteria would not soon evolve (Murphy, 1966: 325).

The first major AICPA publication on the subject of operational auditing came in the form of a 1964 continuing education programme with the title *Improving Profits Through Cost Reduction* (Kellogg, 1964). This was a part of the AICPA's management services curriculum. Although the term operational auditing was not used, the contents of the book centred on questionnaires that could be used to evaluate management and business operations.

Little more was accomplished with respect to public accountants performing operational audits until the GAO's publication of its Yellow Book in 1972. In 1977, the AICPA followed up with a small book entitled *Guidelines for CPA Participation in Government Audit Engagements to Evaluate Economy, Efficiency, and Program Results*. This was Volume 6 of the AICPA Management Services Guideline Series. Earlier, in 1973 (the year after the first publication of the GAO's Yellow Book), an AICPA committee acknowledged the contributions of the GAO in this area:

'The members of the Committee agree with the philosophy and objectives advocated by the GAO in its standards and believe that the GAO's broadened definition of auditing is a logical and worthwhile continuation of the evolution and growth of the auditing discipline.' (Auditing Standards, 1973: 12)

Eventually, in 1978, the AICPA formed a special committee on operational and management auditing. The committee's charge was to research the subject and develop appropriate information for Institute members. After long study and issuance of an exposure draft in June, 1980, the committee's report was published in 1982 under the title *Operational Audit Engagements*. The primary conclusion reached was that an operational audit engagement, when conducted by a CPA in public practice, is a management advisory service that has some of the characteristics of a financial audit engagement.

Accordingly, practitioners seeking the professional standards applicable to operational audits should refer to the standards for Management Advisory Services (MAS) practice issued by the Institute's MAS division, and where applicable,

relevant auditing standards issued by the Auditing Standards Board (Operational..., 1982: iv). Of most significance, this foregoing publication recognised that public accountants were important purveyors of operational audits – an activity traditionally associated with internal and government auditors.

8. Developments in the management profession

At the same time that internal auditors were developing the concept of operational auditing, and to some extent earlier, the management profession was developing a similar activity called management auditing. The first book on the subject, entitled *The Management Audit*, by Thomas G. Rose, was published in 1932 in London.¹ This first book recommended a questionnaire-type interview that was designed to analyse departmental activities. In all probability, the idea of audit-like examinations of functional areas, other than finance and accounting, had bounced around various sources before Rose's book. For instance, Frank L. Rowland, in *Proceedings of the 1931 Annual of the Life Office Management Association* (New York, 1931), dealt with 'Home Office Operating Audits' (Rose, 1932). Rose, however, treated the subject comprehensively, and apparently was the first to do so. *The Management Audit* began as a paper read before the Institute of Industrial Administration, and then as a book encompassing less than 40 pages. Rose was a strong believer in the science of management and advised breaking the enterprise into functional responsibilities and identifying the critical success factors in operations. Rose believed that an experienced management practitioner (he thought a minimum of 15 years' experience was desirable), who was also endowed with an inherent art of management, should be able to measure the efficiency and success of each functional area, much in the same manner that a trained accountant audits accounting records (Rose, 1932: 31).

Rose's background was management. He billed himself as an industrial consultant, and later as an industrial engineer. Further, he held memberships in the Institution of Mechanical Engineers and the Institution of Production Engineers, as well as being a Fellow of the British Institute of Management. Rose's engineering background explains his ability to break management into technical procedures that could be measured in terms of efficiency.

In 1941, the Metropolitan Life Insurance Company published a similar guide, though much more comprehensive, entitled *Outline for A Management Audit*. The Metropolitan publication expanded upon the work of Rose, but was not

nearly as sophisticated as Howard G. Benedict's *Yardsticks of Management*, which was published in 1946. Benedict's questionnaire had nine major divisions and attempted to evaluate management with factorial analysis. These works were the earliest attempts at developing an interview type of management audit, but none of them generated much interest among management professionals.

Later, in the 1950s, the subject of management auditing received a great deal of exposure in management literature. In 1950, Jackson Martindell, president of the American Institute of Management, a non-profit research organisation, published *The Scientific Appraisal of Management*. This was a study of the business practices of what Martindell considered well-managed companies. That book was the precursor of the American Institute of Management's work in the field of management auditing. The Institute's activities in management auditing represented the most extensive application of the process to that time. Martindell's practice of management auditing evolved from a study he conducted of companies that survived the Great Depression. The study identified the common factors of the surviving companies and the weak links of the companies that failed.

During the 1950s, the American Institute of Management (AIM) practised management auditing by performing management audits at hundreds of prominent companies. These activities represented the most extensive use of management auditing up to that time. To this day, the AIM's work still ranks as the leading organisation in terms of performing management audits. Also, that organisation published a periodical for a short period entitled *The Management Audit*. By the early 1960s, the fields of management auditing and operational auditing began to merge as internal auditors saw the benefits of the management literature. Today, the two terms are considered synonymous.

One of the first individuals to merge the work of the two fields was William P. Leonard in his 1962 book, *The Management Audit*. Although Leonard called himself a 'Consulting Management Engineer' on the title page, his sources included a good number of articles from both management and internal auditing publications. In addition, Leonard departed from the extensive reliance on questionnaires recommended by his management predecessors. He placed more emphasis on development of audit programmes and use of working papers – a decidedly internal-audit orientation.

9. Development in other English-speaking nations

Outside of the US, the concept of operational auditing is better known as either value-for-money (VFM) or comprehensive auditing. VFM is a somewhat new phenomenon in most countries.

¹ Rose's book was revised frequently, with additional editions appearing in 1944, 1961, and 1965.

Operational auditing developed in the private sector in the US, but it has been the public sector in other nations that has been responsible for the growth of VFM. Canada was apparently the first English-speaking nation other than the US to experiment with VFM to any extent. One similarity that Canada had with the US was that a member of the management profession is generally given credit for the popularity of the concept. J. J. Macdonell, a senior partner in a large firm of management consultants, was appointed as Auditor General of Canada in 1972 (Parker, 1986: 17). From 1973 to 1978, the Federal Audit Office carried out a series of government studies that laid the foundation for what was then called comprehensive auditing. In 1977, Parliament extended the Auditor-General's task to include a review of economy, efficiency, and effectiveness. However, there was more emphasis on economy and efficiency than on effectiveness (Brathwaite, 1988: 2).²

In 1980, again under the leadership of J. J. Macdonell, the Canadian Comprehensive Auditing Foundation (CCAF) was established. CCAF's objective is to serve as a center for collecting and disseminating comprehensive auditing knowledge and experience with respect to public sector auditing in federal, provincial, and local governments, as well as in hospitals and schools. The combined influences of the Auditor General and the CCAF have had a major impact on the development of a broadened audit scope in Canada (Parker, 1986: 17). As to why comprehensive auditing developed as it did, when it did, and where it did, the answer may be related to the view that there was a serious malaise pervading the Canadian government in the 1970s. One author, Cutt (1988: 2), stated that 'accountability relationships had to be examined in a more searching way to determine whether public sector organisations charged with intervention had failed, in one sense or another, to discharge the mandate entrusted to them'.

Value-for-money auditing has even a shorter history in the UK and other nations. In fact, little has been accomplished in the private sector, although in 1969 a Companies Bill was introduced into the House of Commons that would have given shareholders the power to require directors of a company to allow a management audit. The management audit was defined as:

'...[A]n independent review and investigation which is concerned with the identification of those functional and operational areas where management has failed to achieve the required

external standards of performance and the evaluation of management decisions with the aim of monitoring and improving the total efficiency and effectiveness of the organization'.

That bill failed to pass and there were no voluntary efforts by companies to undertake such audits. Even as late as 1984, a leading British journal published an article advocating VFM audits in the private sector (Glynn, 1984: 141).

The public sector in Britain has provided some impetus toward VFM audits. A 1977 Scottish report, written by the Layfield Committee of enquiry into local government finance, recommended the inclusion of efficiency auditing into the government audit function. The rationale for this recommendation was the defence of taxpayers, who had the right to expect efficient provision of public services at minimum cost (Flint, 1978: 245).

However, it was not until the election of a Conservative government in 1979 that efficiency audits received major attention. Finally, in November 1981, it was announced that the Monopolies and Mergers Commission would carry out annual efficiency audits of nationalised industries (Garner, 1982: 409). The Local Government Finance Act that required local government auditors to conduct audits of efficiency, effectiveness, and economy followed this in 1982. Finally, in 1984, the National Audit Act of 1983 took effect. This act requires the Comptroller and Auditor General to conduct VFM audits of most government departments (Glynn, 1984).

In New Zealand, audits of government efficiency were being conducted at least as early as 1972. However, progress was constrained by a lack of statutory authority for such audits (Parker, 1986: 24). The Public Finance Act of 1977 provided the necessary authority and the Audit Office began performing audits of efficiency and effectiveness. Still, limited resources have kept the number of VFM audits at a minimum in New Zealand (Parker, 1986: 25). New Zealand's Audit Office did create one of the better acronyms regarding the objectives of a VFM audit – CARE (Control, Attest and Authority, Reporting, and Effectiveness and Efficiency). See Glynn, 1984: 141.

In Australia, about 1974, the Auditor General began considering VFM audits. However, the scope was limited only to efficiency, and not to effectiveness. Although the Auditor General argued that the Audit Act of 1901 gave him the authority to conduct efficiency audits, he preferred specific authority and such was granted with the passage of an amendment to allow efficiency audits in 1979. The Auditor General then established a separate Efficiency Audit Division, but this was later reintegrated into the organisation as a whole. Led by New South Wales, the Australian states also inaugurated efficiency audits in the late 1970s and

² Brathwaite's book, that purports to expound a new approach to internal auditing, laments Canadian auditors' lack of interest in effectiveness auditing on pages 1 and 2. However, the remainder of the book devotes only two paragraphs to the subject of effectiveness audits.

early 1980s. Similar to the federal government, the states were reluctant to get involved in analyses of programme effectiveness. Thus, Australian VFM audits differ markedly from those in other countries, particularly the US and Canada, where effectiveness is an integral part of the audit objective.

10. Analysis

Operational auditing as it is known today took root in early management literature. If accounting and internal auditing did not derive their ideas from these early works of management auditing, it is not because the accounting profession did not have the opportunity to draw on management writings. Even if the two professions developed their ideas separately, management advanced the concept first.

In addition, a management organisation, the American Institute of Management (AIM), performed the first substantive work in the practice of management auditing. Also, management writings seem to be more comprehensive than the early internal auditing research. Management applied more of a macro approach as opposed to internal auditing's micro approach. However, this is not to say that management did not provide explicit detail; Martindell's audit programme was explicit. A questionnaire approach was used, but the 10-volume programme set also explained what each question meant, and revealed an underlying philosophy and purpose of the questions.

An analysis of entries in the *Accountant's Index* gives some indication of the quantity of work published on the subject of operational auditing. In 1932, T. G. Rose's book was cited. This was the only reference for that year, and no other work, management or accounting, was referenced until the 1948–50 volume of the Index. Through 1954, most of the citations were management publications, and most of these were from the AIM. In the 1955–58 volume, internal auditors began catching up with the activities of the management writers; internal auditing publications represent the bulk of the accounting articles written in that period. Since then, accounting and auditing publications have far outdistanced management research in the auditing field.

Judging from rudimentary citation analysis, AIM scarcely influenced the later development of management or operational auditing. However, for a brief period, AIM and Jackson Martindell were the prime sources on the subject. It is difficult to comprehend AIM's writings not being referenced, even if they were not cited. As far as the question of AIM's decreased activity in management auditing is concerned, a telephone call to Barbara Doll, the executive director of AIM, provides the answer: 'Jackson Martindell lost interest.' AIM still performs management audits, but not nearly as many as in the 1950s. Doll considers today's audits more

honest. A noticeable feature of the published audits in the 1950s was the absence of major criticism. She called the reports 'puff pieces'. Now, if bad opinions are called for, they issue them, although not publicly. Thus, AIM's procedures were sound, but its practice lacked credibility in the early years.

Undoubtedly, Jackson Martindell and AIM influenced some of the earlier scholars in internal auditing; it would have been hard for scholars *not* to be influenced. However, no hard proof or evidence exists to support this assumption. Additionally, it cannot be determined if Martindell was influenced by the work of the GAO Corporation Audits Division.

Even if internal auditors received ideas from AIM, the underlying philosophy of operational auditing is not one that is exclusive to any one discipline. Although the Institute of Internal Auditors may not have been the originator of the concept, it can be credited with keeping the concept alive and supporting its growth. As the IIA has grown in stature, so too has the concept of operational auditing.

The reason for management detaching itself from management auditing relates to more than Martindell's loss of interest; he was not the only management professional to espouse the concept (after all, someone had to help conduct the over 4,000 audits performed by AIM during the 1950s). The reason for the management profession's demise in the area relates to the direction management science began to take at the same time that the IIA was declaring its resolution to look at all areas of operations and the Hoover Commission was making its recommendations to Congress. Whereas post-war development provided impetus to internal auditors, it also fueled rapid expansion of a field in management known as operations research (i.e., management science in the sense of liberal use of higher-level quantitative methods). Consequently, with the loss of support from AIM and the splintering of the management profession into different areas of interest, few individuals dealt with management auditing.

10.1. The role of Canada

Surprisingly, the long history of operational auditing in the US has not been used to any degree by auditors in other English-speaking countries. The concept of VFM auditing has been largely a government endeavor outside of the US, with the Canadian experience probably being more influential than that of any other nation. One author expressed surprise that Australia and New Zealand had paid so little attention to the US's four decades of experience and so much to Canada's single decade of activity (Parker, 1986: 29). This lack of reliance on the experiences of US auditors is most evident in the scope of the audit activity. In

the US, audits cover economy, efficiency, and effectiveness. The countries 'down under' include only the first two objectives. Canada takes the middle ground by emphasising the first two objectives and giving lip service to the third (according to Brathwaite (1988: 1–2)). Alternatively, a reviewer of this paper speculated that Canadian auditors – instead of auditing for effectiveness – simply try to ascertain that the auditee periodically assesses the effectiveness of programmes, because the 'auditors would not have the skills to ascertain the effectiveness of programmes'.

The lack of emphasis on effectiveness auditing may be attributable to a lack of confidence on the part of audit directors. There has often been greater criticism concerning the subjectivity of audit findings that deal with programme effectiveness. Following the 1985 and 1986 audit reports, the Director of Audit of Hong Kong, Norman B. Stalker, was much criticised for having gone beyond his powers under the appropriate ordinance. The complaint was that Stalker's report had criticised government policies. However, Stalker replied that he had only commented on the way government policies had been implemented and how policy decisions were reached. He stated: 'I believe I am within my conventional limit to conduct value-for-money audits and report thereon, having regard to the internationally accepted government audit standards of economy, efficiency and the effectiveness with which public money is spent' (Vickers, 1987: 35).

The Hong Kong Legislative Council in fact endorsed Stalker's view in late 1986 when guidelines were issued by the Chairman of the Public Accounts Committee on the conduct of value-for-money audits. Stalker was fortunate to have the Legislative Council back him in this conflict with the bureaucratic government managers. Fears of such conflict have no doubt played a part in the willingness of government audit agencies to avoid *effectiveness* audits in other parts of the world.

11. Conclusion

Although there may be some question as to how widespread the practice of operational auditing is among auditors, there is no doubt that the practice has increased over the last 50 years of the 20th century. And, operational auditing is becoming a common practice among external auditors. Internal auditing has changed during the past half century. Although the antecedents of internal and operational auditing go back many centuries, the true development of these activities is a 20th century phenomenon. The main objective of internal auditing has moved from that of fraud detection to assisting management in making decisions. Whereas the job of the internal auditor was once thought to be lacklustre, the internal audit staff of

today is considered the training ground for management level personnel. With this proximity to upper management, the internal auditor will no doubt play even a greater role in future corporate problem-solving.

The early impetus for the growth of operational auditing in the accounting profession came from the GAO. A major leader behind the movement was a public accountant named T. Coleman Andrews. Andrews was able to enter federal service and establish an audit programme that defied the traditions of government auditing. His audit reports were typically critical of the mismanagement he saw in government corporations. It was Andrews' work that led to the GAO becoming the investigative arm of Congress. Although Ellsworth Morse is often given credit for developing the concept of the operational audit during the early 1950s (because he wrote the manual), it was T. Coleman Andrews who began conducting such audits in the 1940s. Indeed, Andrews could perhaps be considered as the 'father of operational auditing' in the US federal government. His audit reports, although unique at the time, are viewed as typical internal audit reports today.

During the early 1950s, a similar field of endeavor, called management auditing, grew popular among management professionals – primarily under the leadership of Jackson Martindell and the American Institute of Management. Although Martindell's management audits were similar to the operational audits performed by the GAO of the 1940s and the internal auditors in industry today, there is no indication that the management professional had any significant influence on the accounting profession. The two concepts of management auditing and operational auditing seemingly grew along parallel lines. The evolution of operational auditing, as a function of accounting probably would have occurred, regardless of internal auditing's action or AIM's lack thereof. The era of accountability is at hand, and accountability today demands more than traditional financial statement presentation and financial audits.

Outside of the US, operational auditing is known as value-for-money or comprehensive auditing and is of more recent development. In fact, it was not until the 1970s or early 1980s that VFM audits began being conducted in English-speaking nations outside of the US. Consequently, these audits and the organisations that conduct them, are still developing and have yet to gain a foothold in most countries. Just as the internal auditors in the US seemingly did not learn from the management profession, and vice versa, the 1970s development of VFM audits outside of the US was seemingly *not* based on the many decades of US experience. Canadians ostensibly developed their concept of comprehensive auditing independently of similar

work in the US.

Later, other English-speaking countries adopted the practices of the still infant Canadian comprehensive auditors. The diffusion of VFM audit concepts to other cultures has been surprisingly slow, or at times nonexistent. Given the similarity of management practices among organisations in English-speaking nations, the lack of routine dissemination of VFM audit practice is an incongruity. This incongruity occurs despite the fact that some leading spokespersons for operational auditing had international reputations. For instance, the IIA's Bradford Cadmus, the author of the first book to contain 'operational auditing' in the title, lectured and published many articles on the subject in British journals (Cadmus, 1959; 1962; 1963). Similarly, management audit proponent Mary E. Murphy, the pre-eminent international accountant of her generation, and a noted accounting lecturer throughout the English-speaking world, was unable to popularise the subject in England, Australia, and New Zealand (Murphy, 1966; Hoskins, 1994).

Perhaps what is an important conclusion is the diversity of points of origin of operational auditing techniques and concepts and the inability of different professional groups to speak across their disciplinary boundaries. If there was a language barrier, the lack of diffusion of auditing ideas might be more understandable. For instance, although not covered by this study, the Scandinavian countries have long been leaders in the application of value-for-money audits in the private sector (Forsstrom, 1958; Bomeli, 1964). The cultural and language differences between Swedes, Finns, and the English-speaking countries is certainly sufficient to slow the diffusion of ideas, but what can explain the lack of a wider distribution of value-for-money-auditing concepts and practices?

For example, in the US there was little in the way of diffusion between the management discipline and the internal auditing discipline. Is it any wonder that auditors an ocean away did not adopt North American concepts, even though missionaries such as Bradford Cadmus and Mary Murphy tried to spread the 'auditing word'?

In industry, it has been said that some international products are not successful because of the 'not invented here, or NIH' syndrome; could it be that the diffusion of auditing ideas is limited by a similar syndrome?

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Harmonisation of financial reporting before the European Company Law Directives: the case of the Nordic Companies Act

Sally Aisbitt*

Abstract—*De jure* harmonisation of financial reporting began early in the Nordic countries with initial discussions reported as early as the 1930s. Legislation implemented in the 1970s was based on a proposal for a common Nordic Companies Act. This article follows the history of this legislation and analyses it with a view to providing insights into voluntary harmonisation across multiple countries. The main lessons appear to be that (1) Germany had a measurable influence; (2) taxes played an important role which has persisted in some countries, with others resisting change until the 1980s and 1990s; (3) the Nordic countries were among the first to introduce a legal requirement for publication of a funds flow statement; (4) meeting the needs of diverse and dynamic stakeholders was addressed differentially by the Nordic countries; and (5) regional co-operation seems to have been overtaken by events on the broader international stage and the costs of compromise.

1. Introduction

The development of financial reporting in the Nordic countries (Denmark, Finland, Norway and Sweden) followed a similar pattern to other western countries: the extent and regulation of financial reporting increased with the industrial revolution and wider share ownership. In the 20th century the process continued, but was further influenced by activities in other countries as well as national needs. In requiring specific aspects of corporate organisation and reporting by law, the Nordic countries seem to have introduced legislation in similar ways to other European countries, although in general they seem to have been early to legislate. This is summarised in Table 1.

From the Table, certain trends can be identified. For example, where requirements to publish balance sheets and profit and loss accounts were introduced separately, the balance sheet was compulsory first. The significance of this has been discussed elsewhere (e.g., Edwards, 1992; Christiansen, 1995a; Nilsson, 1995), but, in general terms, the drivers for increased information about financial performance seem to be wider share ownership and scandals that highlighted the limitations of information published hitherto. It is also noticeable that the Nordic countries were early to introduce regulations for the reporting of

funds and cash flow information. The final line of the Table also demonstrates the role of non-legislative bodies in producing additional regulations for financial reporting.

In the 20th century there were also some conscious efforts to amend regulations governing financial reporting to promote comparability of financial statements prepared in different Nordic countries, with a view to encouraging trade. The first such attempt was through the proposed Nordic Companies Act. This early example of voluntary harmonisation has continued relevance, given that the transition to International Accounting Standards is yet to be compulsory in most countries for most companies. The analysis of the Nordic experience in the 20th century provides useful insights for contemporary policy makers.

This article traces the development of the Act from the 1930s through to its implementation in the 1970s by a review of literature and analysis of draft and final legislation. It challenges the assumption that all language versions and all implementations of the Nordic Act were alike, leading to a common Nordic approach to accounting legislation (e.g., Flower, 1994: 239; Heurlin and Peterssohn, 1998: 1080). The implementing legislation is analysed in the context of its apparent major source, the German *Aktiengesetz* 1965. This provides an assessment of the similarities of the legislation in the Nordic countries and highlights the areas not specifically mentioned in the legislation, hence leading to possible variations in practice. This demonstrates that while the legislation in the four Nordic countries had much in common after the Nordic Act, it was not identical. Furthermore, the legislation indicates that Nordic

* The author is lecturer in accountancy at the Accounting and Finance Research Unit, The Open University Business School, Walton Hall, Milton Keynes, MK7 6AA. E-mail: S.A.Aisbitt@open.ac.uk. Dr Aisbitt is grateful for advice and suggestions from Professor Christopher Nobes (University of Reading) and an anonymous reviewer on earlier drafts of this article, and financial support from the Institute of Chartered Accountants in England and Wales.

Table 1
Earliest regulations associated with financial reporting

<i>First</i>	<i>UK</i>	<i>Germany</i>	<i>Denmark</i>	<i>Finland</i>	<i>Norway</i>	<i>Sweden</i>
Companies Act	1844	1794*	1917	1864	1910	1848
Balance sheet required to be published by law	1844 – 1862 and 1900	1856	1917	1895	1910	1855
Audit report required by law for generality of companies	1844 – 1862 and 1900	1931	1917	1895	1910	1895
P&I required to be published by law	1929	1884	1917	1925	1910	1910
Standardised formats for p&l and balance sheet	1981	1931	1981	1945	1957	1944
Consolidated balance sheet required to be published by law	1947	1965	1973	1978	1957	1944
Consolidated p&l required to be published by law	1947	1965	1990	1978	1976	1975
Funds flow statement required to be published by law	Not required	1998	Not required	1978	1976	1975
Funds flow statement required to be published by standard	1975	–	1979	1983	1976	1984

* The Preussisches Allgemeines Landrecht of 1794 contained the first German provisions on company law and the first uniform stock corporation law for the whole of Germany was passed in 1970 (Schröder, 1993: 336–8).

financial reporting was developing in parallel with, and perhaps influenced by, accounting elsewhere.

Finally, the discussion points out some of the pitfalls that need to be avoided, if harmonisation is to succeed. Harmonisation needs to be a continuous process, if practice is not to diverge as circumstances of countries and companies evolve, and varying stakeholders make their claims. Furthermore, the intentions of some (particularly smaller) countries can be thwarted (as well as supported) by conditions in other countries or international organisations. This is critical in the current climate, where the globalisation of capital markets is driving the accounting regulatory agenda. It is important that the contribution of smaller countries is not lost, as they concede sovereignty in the standard-setting process.

2. The proposed Nordic Companies Act

The proximity of the dates of some of the early legislation shown in Table 1 suggests that legislators were conscious of developments in other countries. This is perhaps unsurprising, given the movement of academics among the countries. For example, Heurlin and Peterssohn (1998: 1083) de-

scribe how the first professors of accounting at both Stockholm and Gothenberg Schools of Economics were German, and their successors had studied in Germany. Nilsson (1995: 228) points out that preparation of the Swedish Companies Act 1944 involved consultation with Denmark, Finland and Norway. In addition to the informal co-operation suggested by these events, there were more formal efforts to harmonise accounting legislation among the Nordic countries. Elling (1993: 582) mentions the initiation of a harmonisation project in 1934 and Alexander and Christiansen (1996) talk about the publication of a proposal in 1942, but this was halted by World War II. A Nordic Council was established in 1952 to formalise the existing links between the Nordic countries. In 1962, a Nordic common market was proposed, and this led to a common proposal for a new Companies Act in 1969 (Flower, 1994: 239). Monsen and Wallace (1995) refer to four Companies Act Proposals (Denmark in 1969, Finland in 1969, Norway in 1970, Sweden in 1971). Each country produced its own version of the proposed Act. The texts of all four versions (in one of the local languages) were published side by side.

A comparison was made of Chapter 12 of the

Table 2
Implementation of the proposed Nordic Act

Country	Companies Act	Accounting Act
Denmark	<i>Lov om aktieselskaber</i> Public Limited Companies Act 1973 <i>Lov om anpartsselskaber</i> Private Limited Companies Act 1973	
Finland	<i>Osakehytölaki</i> Companies Act 1978	<i>Kirjanpitolaki ja -asetus</i> Book-keeping Law and Statute 1973
Norway	<i>Lov om aksjeselskaper</i> Companies Act 1976	<i>Lov om regnskapsplikt m.v. (regnskapsloven)</i> Accounting Act 1977
Sweden	<i>Aktiebolagslag</i> Companies Act 1975	<i>Bokföringslag</i> Accounting Act 1976

proposed Act relating to annual accounts and group accounts as published in the proposal for the Swedish implementation of the Act (see SOU, 1971: 15: 554–83).¹ While there were differences in wording between the different language editions that could be attributed to linguistic idiosyncrasies, there were some clauses that appeared in one (or more) edition(s) and not in the others. These differences are summarised in Appendix 1. While none suggests a major difference in approach to accounting, the existence of distinctions suggests that there had been negotiation and careful consideration of the Act, such that the differences may have seemed more significant to those involved in the process than they appear now. Some of the differences clearly reflect the variations in the constitutions of the different countries, e.g., there are instances when the King can provide exemptions for companies in Sweden and Norway and no corresponding provisions in Finland or Denmark. In other cases the reasons for the variations are less obvious, e.g., Denmark requires a number of items to be disclosed which are not mentioned in the proposals for the other countries.

The proposed Nordic common market may have been inspired by the European Economic Community, and its concept of harmonisation of company law to promote free movement and trade. It is perhaps no coincidence that the Nordic proposals were published just a year after the Elmendorff Committee completed the *avant projet* for the Fourth Directive begun in 1965 and the

same year that the *avant projet* for the Seventh Directive was presented to the EC Commission (Nobes, 1993). Alexander and Christiansen (1996) suggest that Denmark's 1969 proposal was influenced by anticipated future membership of the EEC. This was a general point, because at that stage all the countries were considering membership. Christiansen (1995a: 65) explains that 'an important aim of Nordic accounting harmonisation was agreement of a common definition of profit. The definition chosen followed the Swedish concept of profit, which was closely related to distribution considerations, as in Germany.'

The push for harmonisation also seems to be analogous with that within the Commonwealth of Australia at about the same time. Although uniform legislation was agreed to for all Australian states in 1961, the timing and nature of subsequent amendments varied among states and there was no strong central administration. This led to abuses in terms of interstate fraud and market manipulation. The inadequacies of the system were brought to public attention with the Rae Report in 1974. The six states and the federal government formally agreed to uniform companies and securities law in 1978 (Miller, 1994: 343).

However, the Nordic harmonisation programme did not live up to its promising start. Finland withdrew from the Nordic common market (allegedly under pressure from Russia) and as a consequence of this and/or its unique approach to accounting theory (see Section 4), abandoned its involvement in the Nordic Companies Act (Majala, 1994: 75; Flower, 1994: 240). Nevertheless the publication of a Companies Act proposal in 1969 suggests that Finland's involvement in the Nordic project had not been entirely unproductive, as will be explained in the later discussion of the details of the Acts of the 1970s. The remaining Nordic countries began to fragment with differing decisions on membership of the EEC and changes in the do-

¹ The 'Finnish text' is presented in Swedish in the document referred to. The style of Swedish used is similar to that of the Swedish text. Official Swedish translations published in Finland normally have a particular style, which is different from the Swedish used in Sweden. It is not clear whether the Swedish language 'Finnish text' used here is a somewhat unusual official Finnish version or a convenience translation produced by the Swedes for their own purposes. If this is a Swedish convenience translation, it may be that some of the nuances of the Finnish version have been lost.

mestic political situation (e.g., shortages/discovery of oil, shortages of capital, changes in governments). The commentary on the Norwegian implementation of the proposals demonstrated clear reservations (Ot. prp. nr. 19, 1974–5: 10), e.g., the relevance of a common Nordic approach is questioned if that would be different from other European countries.

Although the proposed Nordic Companies Act was not implemented as such, it strongly influenced the accounting legislation passed in the 1970s in all the Nordic countries. Committees working in these countries indicated that, where possible, it would be natural to have a standard approach between countries (Nilsson, 1995: 231). Denmark introduced the new Companies Acts (in 1973) in this way even though by that stage it had already joined the EEC. Monsen and Wallace (1995: 981) suggest that the Danish Acts were the closest to the proposed Nordic Act of any of the subsequent legislation. All the countries introduced one or more Companies Acts, which set out the accounting requirements for companies' financial statements, and all except Denmark² introduced an Accounting Act which applied to all businesses. There was some overlap between the Acts in each country, with Companies Acts tending to include some of the regulations from the Accounting Acts. At this stage, Denmark was the only country differentiating between public and private limited companies, presumably as a reflection of European Directives, which do this. The 1970s Acts are summarised in Table 2.

3. Nordic accounting legislation of the 1970s

In discussing the preparation of the Swedish Companies Act 1975, Nilsson (1995: 229–30) suggests that the guidelines showed awareness of EEC legislation and in particular the 'new German and French company legislation'. It is not clear what Nilsson means by this, since the only European Directives available at this stage would have been in draft form and the newest German and French 'legislation' would have been the *Aktiengesetz* 1965 and the *Plan Comptable Général* 1957 respectively. The Swedish legislation would be expected to reflect this broader European view, but could not be expected to exhibit characteristics of EC Directives, except insofar as those Directives were products of previous national legislations.

Nilsson goes on to point out that the 'principle behind the annual public reporting of companies should be the greatest possible openness; consequently, accounting would have to be made more rigorous' (Nilsson, 1995: 230). In addition to protecting creditors, financial statements should therefore provide information for management, tax authorities and employees. This suggests a radical approach, although Christiansen (1995a: 64) argues that the new Acts (Public Limited Companies Act 1973 and Private Limited Companies Act 1973) did not meet the auditing profession's expectations in Denmark: '[the Public Limited Companies Act was] primarily a codification of existing accounting practice and concentrated on broad-brush principles and requirements which did little to affect actual practice'. Norway also criticised the proposals: the need for compromises meant that it was impossible for them to be forward looking (Ot. prp. nr. 19, 1974–5: 10). The main features of the new Acts are set out below along with a comparison with the German *Aktiengesetz* 1965.³

3.1. Fundamental principles

The new Accounting Acts and Companies Acts all drew on a general clause that financial statements were to be prepared in accordance with 'good accounting practice' (GAP) in place of the previous general clause. The general clauses are summarised in Table 3.

GAP appears to be equivalent to the German *Grundsätze ordnungsmäßiger Buchführung* (GoB)⁴ as set out in the *Aktiengesetz* 1965. German enterprises must prepare their annual accounts in accordance with GoB (§149(1) *Aktiengesetz* 1965; now in §264 (2) *Handelgesetzbuch* (Commercial Code; HGB)). The Danish commentary on the Bill implementing the Fourth Directive explains the Danish and Swedish backgrounds to the change in the general clause in the 1970s (see Table 2). The GAP clause was intended to be a new common Nordic expression, but in reality, it was simply a paraphrase of the previous general clause, in spite of the apparent harmonisation of the language used. This view was echoed by the Norwegians (Ot. prp. nr. 19, 1974–5: 154). Nevertheless, the Swedes had maintained that a general clause was necessary to provide guidance in areas where statute could not regulate in detail and to allow accounting practice to develop (*Folketingstidende*, 1980: 2974–5). This has been accepted by the other countries (e.g., Vårdal and Johnsen, 1989: 53–7).

The phrase, GAP, has been compared with the 'true and fair view' (TFV) of the subsequent European Directives by a number of authors (e.g., Elling, 1994; NOU 1995: 30: 2.3.4; Alexander and Christiansen, 1996; Aisbitt and Nobes, 2001) who

² The Danish Bookkeeping Act 1959 was amended in 1966, 1970 and 1986.

³ Comparison with the *Aktiengesetz* 1965 is based on Mueller and Galbraith (1976).

⁴ This phrase is often rendered as 'generally accepted accounting principles' in English. For further discussion of the appropriateness of this translation, see Evans (2000).

Table 3
General clauses in Nordic legislation

Country	Pre-1970s legislation	Post 1970s legislation
Denmark	Ordentlig og forsigtig forretningsbrug Orderly and prudent business practice	God regnskabsskik Good accounting practice
Finland	Hyvä kauppiastapa Good businessman manner God köpmannasset* Good businessman manner	Hyvä kirjanpitolata Good accounting practice God bokföringssed Good accounting practice
Norway	Ordentlig og forsiktig forretningsførsel Orderly and prudent management**	God regnskapsskikk Good accounting practice
Sweden	God köpmannasset Good businessman practice	God redovisningssed Good accounting practice

* The official Swedish version published in Finland is shown for the sake of completeness and for easier comparison with the other countries' expressions.

** Kinserdal (1995: 194) translates '*de grundsætninger, som gjelder for en ordentlig og forsiktig forretningsførsel*' as 'those fundamentals that exist for sufficient and conservative accounting'. Elsewhere (e.g., Johnsen, 1993) this has been translated as 'orderly and prudent business practice'. The translation in the article (by the current author) is more literal to avoid introducing interpretation of the phrase that goes beyond the words used.

have concluded that the two expressions are different although they may produce the same results. GAP is primarily producer oriented, while TFV is primarily user oriented. In this respect, GAP is closer to GoB than to TFV. Like TFV, GAP has never been defined in the legislation; however, discussions on the Swedish law are helpful:

'The minister went on to state that recommendations on accounting issues by those well versed in the theory as well as skilled in the practice of accountancy were of great significance for the definition. He mentioned the Industry and Commerce Stock Exchange Committee (*NBK, Näringslivets Börskommité*) and the Swedish Institute of Authorized Public Accountants (*FAR, Föreningen Auktoriserade Revisorer*).' (Nilsson, 1995: 231)

The proposal for the Swedish Companies Act (Prop. 1975: 104: 148) explains that accounting practice becomes *good* accounting practice when it is followed by 'a qualitatively representative sample of companies'. This therefore seems to reinforce the judgmental nature of the concept and the importance of professional accountants and auditors in its definition (Flower, 1994: 241–2). However, this proved problematic for Cooke (1988:100) because of the uncertainty it causes: 'one view is that if an accounting practice is adopted by a major Swedish company that procedure becomes part of general principles'. This leads to other companies changing policies, which makes cross-sectional and time-series comparisons difficult. Alexander and Christiansen (1996: 16–8) cite

the use of the equity method in the 1970s to value the shares of a subsidiary in the parent company's accounts in Denmark as an example of GAP changing accepted practice without any change in law. The use of the equity method in this way is permitted by the Fourth Directive. Although there were examples of this as early as 1973 in Denmark, Alexander and Christiansen's (1996) explanation of the justification of the equity method does not make any reference to the Directive.

Again in common with the debate on TFV, there has been discussion as to whether GAP was an overriding concept. Schwencke and Alexander (1996: 14) point out that, while the Norwegian Companies Act required accounts to be prepared in accordance with GAP, the Accounting Act also required accounts to be in accordance with the provisions of the relevant statutes.⁵ This is used to justify the interpretation that GAP was not overriding in Norway. The approach taken to standard setting from the mid-1970s would seem to reinforce this position. Alexander and Christiansen (1996) suggest that GAP was not overriding in Sweden. This seems more difficult to justify from a legal point of view, as there was no clause in Swedish statute comparable with that in the Norwegian Accounting Act mentioned above. Nevertheless, the importance of accounting practice already mentioned before would seem to sug-

⁵ '*Den regnskapspliktige skal føre regnskap og sette opp årsregnskap i samsvar med god regnskapsskikk og bestemmelser i eller gitt i medhold av denne lov eller andre lover.*' (Regnskapsloven, 1977, § 4)

gest that GAP was overriding in practice, even if that was not the strict legal position. Accounting recommendations also deviated from the strict interpretation of the law (e.g., Artsberg, 1992: 123). The Finnish position seems to have been similar to the Swedish. Alexander and Christiansen (1996) are satisfied that GAP was overriding in Denmark.

Certain comparisons may be drawn here with the hierarchy of Generally Accepted Accounting Principles (GAAP) in the US. Recent enforcement procedures by the Securities and Exchange Commission (SEC) have sought to ensure the acceptability of industry practice. It has been pointed out (LaFalce, 2001) that while some of the so-called 'earnings management' techniques 'may be technically legal, they are economically indefensible'. By extension, it could be argued that such techniques do not fall within GAAP.

Christiansen (1995a: 65) considers it noteworthy that prudence was not mentioned explicitly in the 1973 general clause. However, it continued to be important in practice because of the then close relationship between financial and tax accounting in Denmark (see below). The importance of prudence as a fundamental concept continues to be debated in the context of the Fourth Directive (e.g., Schwencke, 1996; Evans and Nobes, 1996; Van Hulle, 1996). The application of prudence in the Nordic countries seems to lack the consistency it has in Germany. The general valuation principle to be applied in respect to current assets was the lower of cost and market, as in Germany.

However, an important difference from Germany arises in the attitude towards the revaluation of fixed assets. In principle, this was permitted in the Nordic countries, although there may be practical limitations, e.g., the Accounting Act in Sweden points out that revaluations cannot exceed tax values, which may have limited its application in practice. As in Germany, purchased non-consolidation goodwill could be capitalised and amortised. The maximum period of amortisation varied amongst the countries according to Companies Acts, with the Nordic countries allowing less conservative approaches:

Germany	5 years
Denmark	10 years
Finland	5–20 years
Norway	10 years
Sweden	10 years

As this related to non-consolidation goodwill, there were potential tax advantages to early write-offs, so the issue of not writing off goodwill was not relevant. This is in contrast with the debate currently taking place in the US.

Another area where prudence seems to be modified is in the treatment of long-term contracts: both Denmark and Norway specifically permitted (and

still permit) accounting for profit before the contract is complete. Security for liabilities had to be disclosed and Denmark, Finland and Norway required the disclosure of unfunded pension obligations.

3.2. *Untaxed reserves model*

Kinserdal (1995: 195) sees the biggest difference between the Norwegian Acts of 1957 and 1976 as being the introduction of the untaxed reserves model (sometimes confusingly referred to as the tax link model). This persists in Finnish and Swedish accounting today. The untaxed reserves model was designed to address a difficulty that had arisen because companies had to record expenses in the financial statements if they were to qualify for tax deductibility. Tax regulations therefore dominated the accounting treatment of assets and expenses throughout the 20th century. The importance of tax regulations also goes some way to explaining the lack of detailed regulations (e.g., on depreciation and stock valuation) in the Accounting and Companies Acts. However the expenses which were allowable for tax purposes did not necessarily represent the economic reality of the situation, e.g., depreciation, which was allowed for tax purposes, was often more generous than that which would usually be calculated to reflect the use of an asset. Again, a similarity can be seen with Germany: Haller (1992) describes the close relationship between financial and tax accounting in Germany.

The untaxed reserves model aimed to provide users with information about the economic reality of transactions without penalising the company with unnecessary tax. The Swedish Accounting Act 1976 presented a model profit and loss account where the income and expenses were disclosed in accordance with the company's accounting policies to arrive at the *resultat före bokslutsdispositioner och skatt* (profit before appropriations and tax). The adjustments required for tax purposes were then recorded. These would usually involve movements in the inventory reserve, investment reserve and fixed asset write-downs. The integrity of the balance sheet values was retained by writing the appropriations to an untaxed reserve rather than to the specific balance sheet accounts. The untaxed reserves therefore represented a mixture of deferred tax and equity. A similar format has been used in the other three countries. While this sounds to be a neat solution, and analysts have become accustomed to regarding 'reserves' as a mixture of equity and deferred tax, it is still a different approach to that used elsewhere. Moreover, Artsberg (1996) points out the way in which untaxed reserves could be used to generate hidden reserves.

The Danish 1973 Companies Acts did not speci-

fy detailed profit and loss and balance sheet formats, so there was no legislation to propose or enforce the untaxed reserves model. The estimated tax liability based on the profit for the year had to be disclosed as short-term debt, but tax liabilities contingent on the realisation of assets could be shown in long-term debt or the notes. Some Danish companies followed the Swedish model, but others chose to disclose deferred tax in the US manner (Christiansen and Elling, 1993: 66). The matter was resolved shortly afterwards by the separation of tax and financial accounting with the implementation of the Fourth Directive in 1981.

3.3. Notes

The new Acts of the 1970s increased the level of disclosure in financial statements. Corresponding figures for the previous financial period were required and, where necessary, explanations were to be given to allow full comparison. As examples, disclosure was required of shares in other companies, pension liabilities, changes in equity, numbers of employees, directors' remuneration and movements in fixed assets. Again the influence of the *Aktiengesetz* 1965 seems to be apparent as it also required similar disclosure by way of notes. However, there are items which have not come from Germany, e.g., the Norwegian Companies Act 1976 mentions disclosures for leasing and inflation and the Finnish Bookkeeping Law 1973 describes the treatment of foreign currency exchange. These items indicate that the legislation went beyond emulating Germany's legislation and was designed to deal with issues which Nordic companies were currently facing. The Nordic legislators may have drawn on the debates associated with standard setting in other countries, e.g., the American Institute of Certified Public Accountants published *ARS No. 6, Reporting the Effects of Price-Level Changes* in 1963, *APB Statement No. 3, Financial Statements Restated for General Price-Level Changes* in 1969 and *ARB No. 4, Foreign Operations and Foreign Exchange* in 1939 (Choi and Mueller, 1992: 165 and 213).

3.4. Legal reserves

Another feature of German accounting which was mirrored in the 1970s Nordic legislation, except that of Finland, is the legal reserve. The principle was the same in each country, although the size of the reserve and method of creation varied.

Germany	transfer 5% of profit until reserve is at least 10% of share capital
Denmark	transfer 10% of profit until reserve is 10% of share capital, then 5% of profit until reserve is 25% of share capital

Finland	not required by law
Norway	10% of profit until reserve is 20% of share capital
Sweden	10% of profit until reserve is 20% of share capital

In this respect, the Nordic countries appear to have been more conservative than the Germans. As these reserves were compulsory for all companies, and were designed to provide a buffer for creditors, they should be distinguished from reserves accumulated in other countries with a view to smoothing income in poorer years. However, the position has since changed: legal reserves are no longer required in Denmark and Norway. The 1990s saw an increase in the proportion of finance being provided by shareholders, which may have led to a perception that protection of creditors, and hence the reserves, were no longer required.⁶

3.5. Consolidation

The proposed Nordic Act required 'group accounts' comprising a consolidated balance sheet. 1973 saw the first definition of a group in Danish legislation (Christiansen, 1995a: 64). Danish groups were required to publish a consolidated balance sheet, or a 'group statement' showing inter-company debt and the separate disclosure of the profits of the parent company and the subsidiaries. This codified what a number of companies were already practising on a voluntary basis (Christiansen, 1995a: 65). However the legislation provided little guidance on specific measurement issues. In contrast with the requirements in other countries, only the parent company proportion (rather than the full amount) of unrealised inter-company gains and losses had to be eliminated, except that there was full elimination of unrealised gains and losses on the transfer of fixed assets.

Full consolidated accounts, including an income statement, were required in Norway in the Companies Act 1976 as an extension of the 1957 law, which only required a balance sheet (Kinserdal, 1995: 196). The accounting principles used in the consolidated financial statements were to be the same as those used in the entity accounts, which meant that the tax effects percolated through into the group accounts. There was a similar requirement for consolidation in Sweden with the Accounting Act 1975. Finland also required consolidated accounts in the Companies Act 1978.

⁶ A crude measure of the importance of equity is the ratio of domestic equity market capitalisation to GDP. In Denmark this rose from 22 in 1992 to 57 in 1998. The corresponding figures for Norway were 14 and 38. The move to equity was more pronounced in Sweden (31 to 117) but the conservative reserves policy was retained. (Sources: market capitalisation: International Finance Corporation, 1999; GDP: International Monetary Fund, 1999.)

3.6. *Statement of fund flows*

Although the proposed Nordic Act did not mention statements of fund flows, larger and listed companies in Sweden, Norway and Finland were required to provide a statement of fund flows following the Companies Acts of 1975, 1976 and 1978 respectively, although the legislation gave no details of form or content. This is interesting as this legislation predates any legislation requiring funds flow statements elsewhere in the world. There are records of funds flow statements in the UK as early as 1862 (Rosen and De Coster, 1969: 125), and the US seems to have followed. However, the Nordic countries may have looked to the Accounting Principles Board Opinion 3, *The Statement of Source and Application of Funds* published in 1963 in the US. This suggests that the Nordic legislators were looking beyond the existing German legislation. However, the fact that Denmark does not include this requirement may indicate that it was an area of contention in the drafting of the proposed Nordic Act and/or not fully supported by Denmark, due to a closer relationship with German/EC regulations which had no such requirement. However, by 1984, Elling and Hansen (1984: 39) were able to say that although there was no legal requirement for a funds flow statement, it was considered GAP in Denmark. This practice demonstrates the way in which GAP went beyond legal requirements. Subsequent developments in the Nordic countries have been in line with the international trend towards cash- rather than funds-based statements.

3.7. *Directors' report*

Christiansen (1995a: 64) sees the introduction of the directors' report in 1973 as a mandatory part of financial reporting as one of the most important changes. In principle, the directors' report was to provide the reader with information essential to the understanding of the financial position and profit of the company, which could not be derived from the accounts themselves. This requirement was also found in Finland, Sweden and Norway and seems to correspond broadly with that in Germany and the 1971 draft Directive.

3.8. *Filing*

Another provision of the proposed Nordic Act, which was implemented by all countries, related to the filing of annual reports. Both public and private companies (now including family companies) were required to file audited financial statements with the public Danish Commerce and Companies Agency (Christiansen 1995a: 65) following the Companies Acts 1973. At this time, a similar filing requirement was introduced for larger and listed Norwegian companies (Kinserdal, 1995: 196). This was also the case in Sweden and Finland following

their new accounting legislation in the 1970s. This provision seems to be some way behind the UK which required filing of accounts as early as 1844, although the filing of audited accounts (defined as a balance sheet) did not become effective until 1907 (Edwards, 1992). However, it is perhaps understandable, given the predominance in the Nordic countries of companies with narrow share ownership financed largely by debt.

4. *Distinctive features of the Finnish Accounting Act 1973*

Finnish writers (e.g., Troberg, 1992; Majala, 1994; Näsi, 1995) are keen to point out the influence of accounting theory to find solutions to practical problems in Finland: this then forms the basis of legislation or provides the justification for departures from existing regulation. They argue that this approach differentiates the Finnish accounting legislation of the 1970s from that of the other Nordic countries implemented at the same time. The Accounting Act 1973 (and the Company Tax Act 1968) reflected a change in practice, which had emerged in the 1950s and 1960s based on Martti Saario's Expenditure Revenue Theory (Majala, 1994: 75-6) in addition to the proposed Nordic Companies Act as described above.

Saario put forward the Expenditure Revenue Theory of bookkeeping in his doctoral thesis in 1945, *'Realiointiperiaate ja käyttöomaisuuden poistot tuloslaskennassa'* ('The realisation principle and the depreciation of fixed assets in profit calculation'). This theory criticises the balance sheet equation or static balance method of calculating profit. In particular, the allocation of depreciation according to a pre-determined plan with no consideration of revenues was decried. It aims to present transactions from the entrepreneur's point of view. At the end of an accounting period, the profit is calculated as a result of the following calculations:

- (a) the division of revenues into expenses and profit;
- (b) the division of expenditures into expenses and assets.

It is assumed that the sum of profits in each period of the company's life equals the total profit of the company. If a firm is to be established or to continue, then the total profits must be positive (otherwise the company would not be started or would be liquidated). Therefore, if the total profits will not be negative, the profits of no individual period should be negative. Depreciation may therefore be ignored in a given year to avoid the calculation of a negative profit. Nonetheless, negative depreciation is not permitted. Strict matching is applied, so depreciation is calculated based on the original

purchase price and the corresponding annual income, rather than the physical aspect of the assets (Majala, 1994: 71–3).

It is argued that the dominance of the Expenditure Revenue Theory and the education of accountants reduce the need for detailed regulations in the legislation (Aisbitt, 2000). However, that leads to tremendous variation in practice, as demonstrated by Jägerhorn and Troberg (1980 and 1981). Nevertheless, variation alone does not put Finland in a unique position: similar difficulties were experienced with Sweden (e.g., Cooke, 1988).

While the theoretical argument may dominate the accounting legislation, accounting practice is influenced by the constraints of the tax legislation. For example, in practice, depreciation tends to be charged to the maximum that tax rules will allow without creating a loss (which may have tax disadvantages). This is in conflict with the Theory but is understandable from management's point of view (Majala, 1994: 73). The close relationship between financial reporting and tax could be problematic. Troberg (1992: 31) points out that financial statements in Finland were criticised as being 'tax minimisation' rather than 'economic reality' statements. The variation in depreciation charge from year to year violates the consistency principle, which is fundamental in other countries. International companies gradually began showing depreciation according to plan and a separate adjustment to the actual depreciation charge. A similar approach was adopted for inventory, operating and investment reserves (Troberg, 1992: 32–3). The funds flow statement, which was compulsory for larger companies under the Companies Act 1978, would be expected to be a particularly helpful source of additional information for international users.

In spite of the claims of Finnish writers to the contrary, the Finnish Accounting Act 1973 and Companies Act 1978 still had a great deal in common with the contemporaneous legislation in the other Nordic countries in the written legislation (as shown above). The natural temptation to minimise tax liabilities is likely to have increased that likeness in practice. Some Finnish users, preparers and auditors were of the opinion that the theory would not be important for comparing Finnish financial statements internationally: what were vital were the statutory requirements (Aisbitt, 2000).

5. Conclusion

The Nordic countries essentially have a Roman law tradition, so it is understandable that financial reporting requirements would be codified in law rather than be allowed to develop through practice. However, it is interesting that another Roman law country, Germany, did not bring the requirement for a funds flow or cash flow statement into statute

until 1998, although Finland, Norway and Sweden did this in the 1970s.

The German influence on accounting in the Nordic countries is apparent throughout the 20th century. German academics were the first professors in Swedish universities and their work was studied throughout the Nordic countries. The legislation at the turn of the century and in the 1970s has strong links with the preceding German legislation. However, the Nordic countries did not adopt the more rigid accounting plans followed by some other countries after German influence during the second world war (although there were accounting plans for internal accounts in some industries [e.g., ter Vehn, 1945]). As early as the 1970s, other influences could also be seen. The Nordic countries were considering membership of the EEC and the effect of other European countries and the US were apparent. The concept of GAP and its application, particularly in Sweden, seems to appeal to the common law tradition and perhaps even the British TFFV.

In common with other countries, e.g., Germany, France, Italy and Belgium, the Nordic countries' financial accounts were (and still are in the case of Sweden and Finland) strongly affected by tax rules, such that the financial (or commercial) accounts were the same as the tax accounts. The necessity for financial and tax accounting to be identical was dispensed with in Denmark in 1981 and Norway in 1992. In both cases, these dates mark the end of a gradual process and reflect a combination of factors. Tax regulations had evolved so that fiscal objectives were no longer compatible with income measurement (e.g., Hansen, 1998), making the financial statements less accessible to international users. There are indications that protracted negotiations preceded the change in Norway (e.g., Fagerstrøm and Schwencke). Some changes were made to reserves for tax purposes in Sweden in the 1990s, but the link between commercial and tax accounts remains strong. Sweden recognised the value of separating tax and financial accounting when implementing the European Directives, but decided to address this as a separate issue to avoid delaying the implementation of the Directives (SOU, 1994). Breaking the tax link seems to be another example of internationalisation, and perhaps prioritising the needs of international over domestic users. It is perhaps no coincidence that these developments follow increases in foreign ownership of shares (see Oslo Stock Exchange, 1995). These in turn followed relaxation of restrictions on foreign ownership.⁷

The tax regulations were therefore influential in

⁷ For details of restrictions see Oxelheim, Stonehill, Randøy, Vikkula, Dullum and Modén, 1998: 48.

the choice of accounting policies and the presentation of information. However, the Nordic countries recognised as early as the 1970s that the tax-based information presented in financial statements did not necessarily meet the needs of users of accounts such as investors. The introduction of the untaxed reserves model (described in Section 3.2) was designed to increase the information value of financial statements for domestic and international users.

Given the relatively small size of the Nordic countries, it is perhaps unsurprising that a small number of individuals have been able to exert significant influence. Saario's work has been discussed in Section 4, and Finnish writers claim his theory distinguishes Finland's financial reporting from that of other nations. An accounting elite has also been described by Jönsson (1984) as determining accounting policy-making in Sweden. However, the process of regulation is not entirely idiosyncratic: the framework of laws supported by professional recommendations and, later, standards is similar to that in other countries. The use of IASC standards in place of national standards in Denmark and as a source of reference in other countries for the secondary regulation to support legislation provides further evidence that the Nordic countries are not purely inward-looking.

In the period prior to the implementation of the European Company Law Directives, there appear to be two points at which financial reporting regulation clearly converges in the Nordic countries. The first, and perhaps more tenuous point, was at the start of the 20th century. The countries may have looked to one another's legislation or may all have looked to German legislation for inspiration at this early stage of development. However, given the lack of detail in the legislation in any of the Nordic countries or Germany at that time, the similarity of the Acts cannot be assumed to have led to convergence of practice.

The next period of converging legislation seems to have come in the 1970s. Denmark, Finland, Norway and Sweden seemed to introduce legislation that was broadly similar as a result of their common involvement in the project for the Nordic Companies Act. There was a conscious effort to work together and have a common framework. Parallels can be drawn with the European programme of harmonisation of company law. However, just as the harmonisation of law among members of the European Community has not necessarily resulted in standardisation of practice, the common laws in the Nordic countries will not necessarily have produced uniform financial statements. Evidence of this is recorded elsewhere (e.g., Hjorth and Petersen, 1983; Eilifsen, 1984; Cooke, 1989; Jägerhorn and Troberg, 1980 and 1981; Christiansen, 1995b; Aisbitt, 2001). In spite

of its apparent similarities with the other countries' legislation, Finland's was founded in an alternative paradigm. As the legislation merely provided a framework, there was scope for variation of practice by companies within and among countries. Efforts were made to improve the quality of the information produced and perhaps to reduce the variation within a country through the publication of accounting recommendations. The bodies responsible for these recommendations operated independently in each country, although they may have referred to the work of other countries or international bodies, such as the IASC. Shortly after the final Nordic country implemented the proposed Nordic Companies Act, Denmark moved away from the Nordic model with the implementation of the Fourth Directive in 1981, as a condition of its membership of the European Community. This is therefore another factor contributing to the potential for divergence among the countries at this stage in their history.

The history seems to provoke a number of questions. From the Second World War, the Nordic countries felt that they had sufficient in common and that harmonisation was sufficiently desirable to spend 17 years working on a common Companies Act proposal. Yet even before the proposal was implemented, countries began to go their separate ways. Was it that once the proposal was complete it was felt no further co-operation was necessary? The process of formulating and implementing accounting legislation and standards and guidelines in the Nordic countries does not appear to have been explored in the literature: it concentrates on the results rather than the process. However, some clues may be found in the commentaries implementing the 1970s Acts. Co-operation seems to have proved more time-consuming and involved more compromises than the parties had anticipated. As a result, the countries may have felt that they could be more productive on their own.

By the end of the exercise, doubts even seemed to have been emerging on the validity of harmonisation at a Nordic level, when companies were trading on a European or global level. A further explanation could be found in external factors: the 1970s and 1980s were a period of political and economic change in each of the countries, and the four countries each developed in different directions, e.g., Norway discovered oil, Denmark joined the EC and Sweden suffered from an oil crisis and inflation. Interviews with practitioners and academics who had known those involved in the proposed Nordic Act did not provide alternative theories or obvious conclusions for the reason for the cessation of formal co-operation on legislation (Aisbitt, 2000). Nevertheless, there continues to be good communication between standard setters and practitioners, both on a personal level and through

organisations such as *Nordiske Revisorforening* (Nordic Auditors' Association) and via the joint Nordic representation on the Board of the IASC. Thus it appears that, while the experience of the proposed Nordic Companies Act seems to have

discouraged formal co-operation among legislators, it did not deter informal co-operation among individuals involved in the process. This ensures that small countries take a wider approach and draw on international best practice.

Appendix 1

Summary of differences between language editions of Chapter 12 of the proposed Nordic Companies Act

Section	Details	Denmark	Finland	Norway	Sweden
96§	Accounts must be passed to the auditors at least 1 month before the general meeting	×	✓	✓	✓
	The terms of this Act apply only insofar as they do not contravene the Banking Act	✓	×	×	×
98§	More detailed explanation of implications of Good Accounting Practice	✓	×	×	×
	Definition of acquisition cost	×	✓	✓	✓
99§	Definition of 'real value'	×	✓	✓	✓
100§	Depreciation is to be charged even if the result is or thereby becomes a loss	✓	×	×	×
101§	Costs of increasing share capital may not be capitalised	✓	×	✓	✓
	Listed investments must not be shown at a value higher than the accounting year's latest listed purchase price	✓	×	×	×
	Valuation of foreign work in progress can include a prudent proportion of profit	✓	×	×	×
102§	Mortgages and guarantees shall be shown above the line	×	✓	✓	✓
	Layout of the balance sheet – items were not always in precisely the same order and the following items were not specifically mentioned in all versions:				
	Tax assets	×	✓	×	✓
	Work in progress for foreign accounts	✓	×	×	×
	Buildings	×	✓	✓	✓
	Bank loans and similar debt	✓	×	×	×
	Long term debt – pension provision	×	×	×	✓
	Long term debt – other long term debt	×	×	×	✓
	Dividends payable	✓	×	×	×
	Unpaid dividends from previous year(s)	✓	×	×	×
	Dividend for the year	✓	×	×	×
	Long term debt – priority debt	✓	×	×	×
	Long term debt – other secured debt	✓	×	×	×
	Long term debt – convertible debt	✓	×	×	×
	Long term debt – dividend bearing debt letters	✓	×	×	×
	Long term debt – other debt	✓	×	×	×
103§	Loans to related parties in excess of 50,000 kronor or 5% of capital (if lower) to be disclosed separately	×	✓	×	✓
	Loans to related parties to be disclosed separately (no <i>de minimis</i>)	✓	×	✓	×
	Any 3rd party guarantees not covered above must be disclosed separately	✓	×	✓	×
104§	Layout of p&l				
	Transfers to investment funds specifically mentioned	✓	×	×	×

Appendix 1**Summary of differences between language editions of Chapter 12 of the proposed Nordic Companies Act (continued)**

Section	Details	Denmark	Finland	Norway	Sweden
105§ 1	The King can provide exemptions from disclosures about subsidiaries	×	×	✓	✓
	Information about subsidiaries can be omitted if it would be harmful to the company	×	✓	×	×
105§ 3	Pension liabilities not provided in the balance sheet to be disclosed	✓	×	✓	✓
105§ 7	Taxation value of fixed assets must be given	×	×	×	✓
	For real estate the latest official valuation must be given	✓	×	×	×
105§ 12	Additional disclosures regarding the calculation of profit on foreign work in progress	✓	×	×	×
105§ 13	Additional disclosures regarding the tax implications of the valuation of the company's assets	✓	×	×	×
105§ 14	Additional disclosures regarding tax paid in the accounting period	✓	×	×	×
106§	Annual report should give details of interests in unlimited companies and their latest accounts	✓	×	×	×
108§	Accounts must be filed within one month of approval	×	✓	✓	✓
	Accounts must be filed within one month of approval and within seven months of the year end	✓	×	×	×
	The King can provide exemption from filing of accounts	×	×	✓	×
111§	Profit should be set aside to reserves in accordance with §40	×	✓	×	✓
	10% of profit should be set aside until legal reserve is 10% of share capital in accordance with §40	✓	×	×	×
	10% of profit should be set aside until legal reserve is 20% of share capital	×	×	✓	×
	The King can provide exemptions from establishment of legal reserves and prescriptions relating to use of legal reserves	×	×	✓	×
112§	Owners of more than 10% of the share capital can demand distribution of half of the profit for the year (after statutory dispositions)	×	✓	✓	✓

Key

✓ Item present

× Item not present

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Book review

The Auditors Talk. An Oral History of a Profession from the 1920s to the Present Day. Derek Matthews and Jim Pirie. Garland Publishing, 2000. ix+494pp. £75.

This book is directed at a number of overlapping audiences: accounting historians; business historians; oral historians; and practising accountants, especially those of 'a certain age'. One consequence of this is that the authors (who are not accountants) give footnote explanations of technical terms to an extent that may surprise some readers. The core of the book comprises edited transcripts of interviews with 68 auditors or former auditors divided into eight groups: small firm practitioners; pioneer women accountants; accountants who 'left the profession'; practitioners in medium-sized firms; provincial partners in the major firms; leading national partners; the 'great and the good'; and contemporary leaders. The interviews are topped and tailed by an introductory and a concluding chapter by the editors. There is an excellent index.

The editorial chapters are well-written and informative. The Introduction explains why the project (financed by what was then the Research Committee of the Institute of Chartered Accountants in England and Wales) was set up, how the interviews were conducted, and how they were transcribed and edited. There is an enlightening discussion of the strengths and weaknesses of oral history. The editors point out that 'oral historians have traditionally given voice to the disadvantaged or the weak in society, who are usually given little say and have perhaps little interest in how they are represented' (p.8). Accountants do not fall into these groups and most interviewees took a keen interest in the final text of their interview, even to the extent in some cases of refusing to allow publication. Some are refreshingly outspoken and candid. Audit committees and remuneration committees are 'nonsense' says Patrick Spens, since they are 'all self-appointing' (p.159). The English Institute, argues Colin Sharman, should be either a trade association or a regulatory body. It is not credible for it to try to be both (p.357) James Carty believes that not enough of the university graduates now entering the profession are used to hard work (p.373). David Tweedie argues that firms today have too many samurai as partners and not enough mandarins (p.384).

Most of the interviews make lively and interesting reading, although the views expressed can often be predicted from the interviewee's age and

career. There is a generation gap and a gulf between those who have worked in the smaller and larger practices. The experience of moving from one to the other could often be uncomfortable. Stanley Middleton describes the experience of being taken over by Coopers as 'mind boggling' (p.208). The interviews help to explain why some firms grew and others did not. There is some agreement on which individuals mattered. The names of Henry Benson (1909-95) of Coopers and Ronald Leach of Peats crop up several times as two of the most influential British accountants of the 20th century. Douglas Morpeth explains the difference between them: both were ruthless, but whereas Benson was 'just ruthless', Leach would 'get what he wanted but you would want to give it to him' (p.318). To David Hobson (senior partner of Coopers & Lybrand, 1975-83), Benson was 'a man of great distinction', who together with John Pears woke up a firm which had been asleep for about forty years and put it in the first division, but he was 'not the easiest to get on with' (p.275). Michael Carey remembers Coopers in the 1970s as a 'commercial and aggressive organisation' in a profession which was still gentlemanly and without much outright competition (p.260). Benson was responsible for the compilation and publication of Coopers' *Manual of Auditing*, whose influence is referred to by several interviewees.

Inevitably there is a certain amount of nostalgia for the good old days, when there was less regulation, and more room for professional judgment and common sense. 'Rigidly set [audit] schedules are partly, if indirectly, responsible for the Maxwells and the Polly Pecks' suggests John Simpkins (p.44). On the other hand, there is plenty of evidence in the interviews of less appealing aspects of the past: discrimination on the basis of gender and wealth (as in other professions) and the system of training through underpaid articled clerkships and unimaginative correspondence courses. William Brittain remembers 'coping with boredom' and 'drudgery' (pp.117-8). Charles Hardie had to pay a premium of 500 guineas and wear a bowler hat and spats (p.267). Very few accountants were women and very few came from working class backgrounds.

These and other topics are discussed in the editors' concluding chapter. For example, they high-

light the disappearance of a business culture based primarily on local, personal and family networks, and they note the unwillingness of the interviewees to discuss accounting scandals or to accept audit reports as the City of London's principal alarm bell.

The Auditors Talk can be highly recommended. It is a pity that a cover price of £75 (too high even

for most libraries) means that many people who would benefit from and enjoy this book may not get that opportunity, which I am sure was not the intention of the English Institute's Research Committee when it had the good sense to back the original research project.

University of Exeter

R.H.Parker